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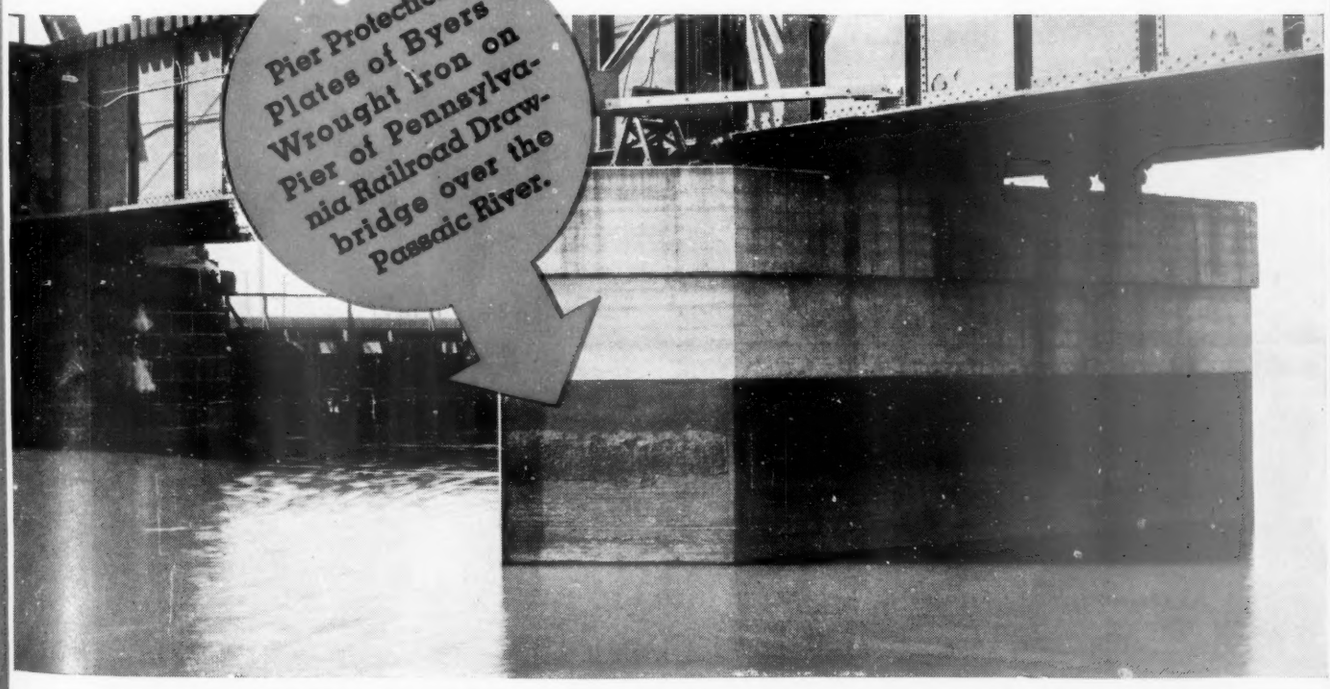

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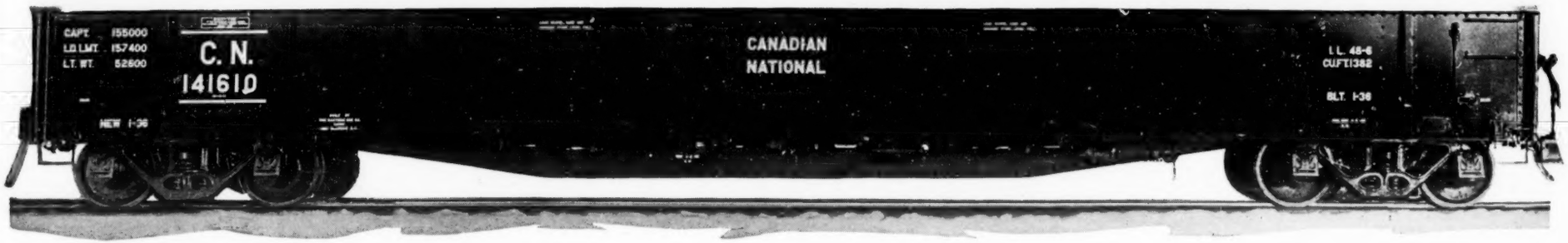

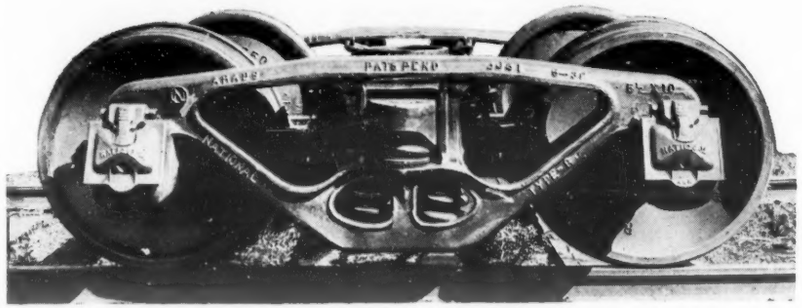

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In This Issue

Impact on Bridges—An Achievement in Research ..... Page 906

Tells how removal of uncertainties permits of closer computations in the ratings of old spans and will save many an old structure slated for removal.

Power Plant on Wheels 910

A. Lipetz, chief consulting engineer of the American Locomotive Company, considers the steam locomotive as a traveling power plant and compares it with a stationary plant of similar capacity.

Bin Pricing in Wabash Stores Survives Depression 921

W. F. Brown, chief clerk, Wabash general stores, Decatur, Ill., tells how plan has been preferred to office pricing after 12 years' trial in all stores and with all materials.

EDITORIALS

Mr. Lippmann Comments on the Transportation Situation 903
Five-Months Equipment Orders Above 1935 Totals 905
More Activity in Maintenance of Way 905

GENERAL ARTICLES

Impact on Bridges—An Achievement in Research 906
Freight Car Loading 909
Power Plant on Wheels, by A. Lipetz 910
Pooling of Grain Elevators Again Urged 914
Publicize Success of New Trains 915
Pool L.c.l., Eastman Again Adjures 917
Air Conditioning Research Now Well Underway 919
Bin Pricing in Wabash Stores Survives Depression, by W. F. Brown 921
R. F. C. Chairman Explains M. & St. L. Plan 923
A. A. R. to Spend $1,300,000 for National Advertising 924
Build New Fork Truck 925

COMMUNICATIONS 925

NEWS 926

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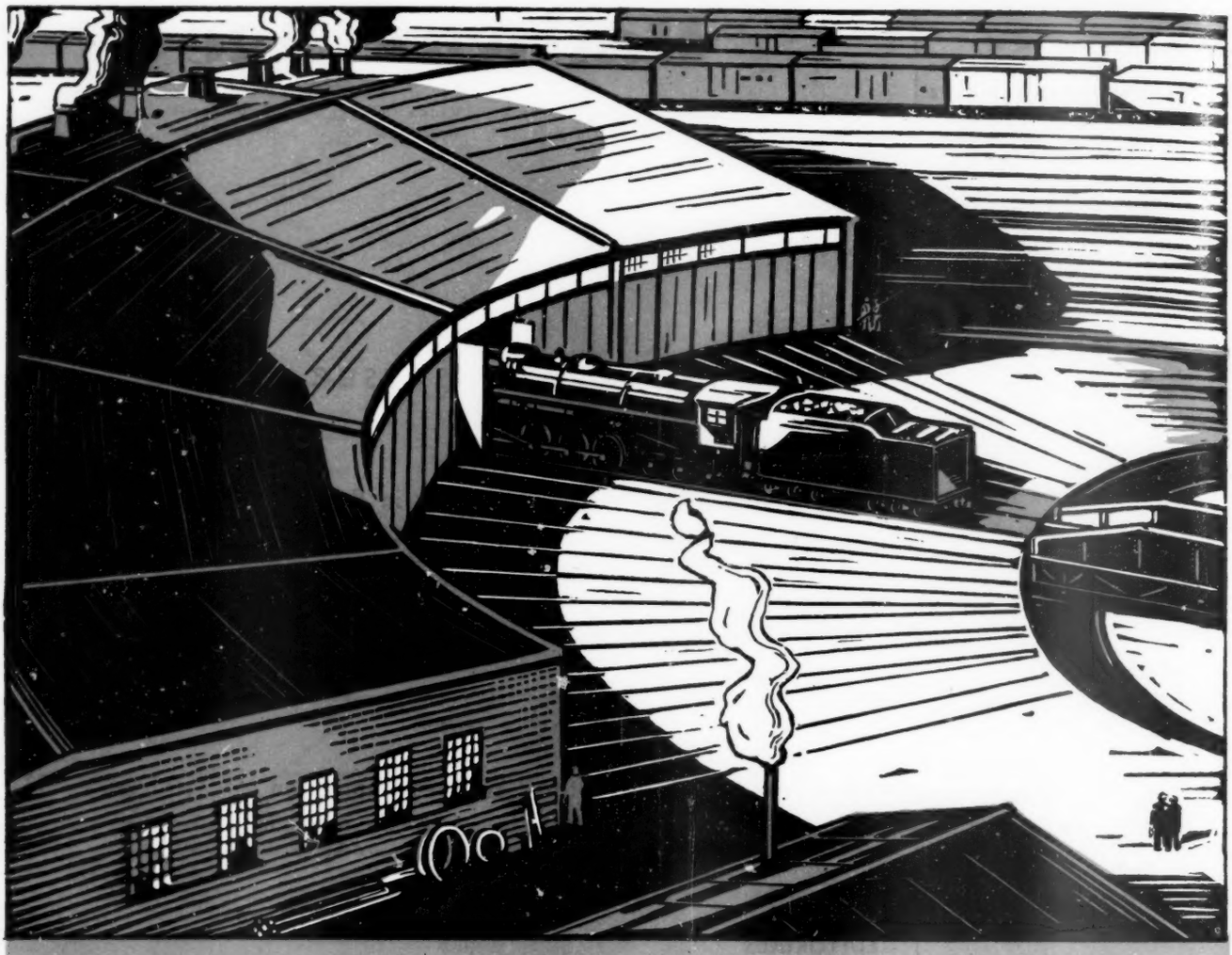

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Mr. Lippmann Comments On the Transportation Situation

In the bewildering complexity of American political and economic life, salvation from chaos rests heavily on that leaven in society composed of intelligent and disinterested men who first ascertain from the specialists in each field the facts about what is occurring, and then relate and interpret these independent facts into a synthetic whole. We refer to such men as President Butler of Columbia University, Dr. Harold G. Moulton of the Brookings Institution, Walter Lippmann, the newspaper commentator, President Frank of the University of Wisconsin, and others of similar breadth of interest.

Such men inspire the confidence of lesser leaders of public and business life. To them must go in large measure the credit and responsibility for leadership of the forces working toward orderly and effective economic and political life in this country. The function of these men is one of grave importance. If they err in their facts, or if an emotional aberration leads them to interpret the facts through prejudice rather than cool reason, then honest and intelligent politico-economic opinion in the United States will, to the extent of their error, simply not exist. Light cannot proceed out of darkness, nor can a civilized and beneficent society be produced by rabble-rousers or cynical commercial pirates. If our respected and respectable intellectual leaders fail us, then error is irremediably loosed in the land.

"Backward Railroads, Progressive Motor Makers," Once More

There is probably no more influential man among the leaders of constructively conservative thought than Walter Lippmann, whose writings on economic and political matters are widely syndicated in daily newspapers. It is an occasion of importance, therefore, when he expresses opinions on a subject as important as national transportation policy which are based on erroneous presumptions of fact. This he did in a recent article in which he accused the railroads of fostering an effort by the government to raise the cost of transportation. "The railroads as protected monopolies," he said, "have been until very recently the most backward of the transportation agencies, whereas the automobile industry, under competition and without any government protection, is the most progressive, giving constantly improving service for less money."

These statements are absurd. Charles F. Kettering is the research and inventive genius of the automotive industry, and is president of the General Motors Research Corporation. In an address before the Chicago Association of Commerce on May 27, Mr. Kettering said: "There has been a lot of criticism of the railroads, but there is one thing the critics have forgotten, or perhaps never remembered, and that is that the railroads are not manufacturing organizations. They are operating organizations, and I believe they have done as excellently with their equipment as any other organization could have done. A great deal of discussion has been brought up about their not having a research and development organization. I think they have done as splendid research and development work in their particular line as anybody else."

Regulation of Motor Carriers

The regulation of motor carriers, which Mr. Lippmann has in mind when he writes of raising transportation prices to a "monopoly level," has no such purpose. He believes apparently that motor carrier rates are to be "regulated" up to the level of railroad rates which, he seems to assume, are higher. But there is nothing in the motor carrier act to require truck and bus rates to be determined with reference to railroad rates or costs of operation. Neither is there anything in the law from which an assumption might fairly be drawn that an efficient carrier would be prevented from putting into effect rates as low as its operating costs would permit. Without regulation, interstate motor carriers can, and in many cases do, operate without insurance, with overworked drivers and with unsafe equipment. The costs of these evasions are now borne by others than the users of highway transportation. Regulation should end these evasions and might, to that extent, increase the *price* of highway transportation—but the social *cost* of providing it would not thereby be increased in the slightest, nor would regulation of such matters contribute toward raising motor carrier rates to a "monopoly level."

The regulation of motor carrier rates, in its initial stages at least, consists of nothing more "monopolis-

tic" than a requirement that motor carriers file their tariffs and thereafter adhere to them. The requirement of certificates for new operations on the highways will tend to limit new entrants into the business, but it would be imaginative in the extreme to see "monopoly" in the present number of motor carrier operations, even if new undertakings were entirely prohibited. The accusation of "monopoly" in connection with motor carrier regulation, in sum, cannot be substantiated, and, if Mr. Lippmann would take the trouble to inquire into the facts a little more deeply, we are confident that he would withdraw, or greatly mollify, the allegation.

Highway Transport Without the Highways

In passing along uncritically the old canard about the "backward" railroads and the "progressive" automobile industry which has given "constantly improving service for less money," Mr. Lippmann's search for facts has been even more superficial. Automotive transportation consists of two elements—the vehicle itself and the *highway*. This latter element, which Mr. Lippmann ignores in praising automotive transportation, has been the principal factor in the "progress" which he acclaims—and not the improvement in the automotive vehicle, great though that has undoubtedly been. And the principal causal factor behind our colossal program of highway improvement has been the taxes and bond issues by which the public has paid for it.

Does Mr. Lippmann doubt that, if the federal, state and local governments had been spending billions to extend *railways* and to replace expensively operated lines by routes of easy grade and curvature, the railway equipment manufacturers would also be vieing with each other to supply the enormous demand for railroad equipment which would follow such "cheapening" and improvement and expansion? And out of such activity and expansion improved designs would naturally flow rapidly. In short, the progress which Mr. Lippmann sees in the automotive industry, while it has undoubtedly occurred, has arisen primarily from an enormous highway subsidy. The progress in the design and price of automotive vehicles is an effect rather than a primary cause of improved efficiency in highway transportation. And it is an effect which would be secured on the railroads, and probably any other industry for that matter, by an application of a similar policy of subsidization.

Free Enterprise Impossible Without Self-Support

Free competition, as Mr. Lippmann well knows, must be founded upon private initiative *unaided*, as well as uncontrolled, by the government or private monopolists' management. A scrupulous commentator on transportation should not overlook the fact that, from this aspect, the railroads are much nearer the economic ideal than any of their rivals. The *Railway Age* does not want to see "monopoly prices" influencing the division of traffic between railroads and highways any more than does Mr. Lippman. But in our belief in private enterprise we go even farther: Neither do we want to see the division of traffic influenced by subsidies or by the failure of one agency to carry insurance or provide fair hours of labor or wages for its employees.

Mr. Lippmann is on sounder ground when he criticizes the railways for monopolistic wage rates which have resulted in charges to the public higher than would otherwise have been necessary. But this monopoly has not been created by the railways. No doubt they should have resisted more strongly the pressure from labor leaders and politicians; but it is a fact, nevertheless, that the monopolistic wage on the railways has been created principally by the effective pressure of labor leaders and politicians working together. Wage rates above the market price have meant railway rates above the market level and a consequent decline in patronage which has reduced railway employment. The favored employees who are retained benefit, it is true, but the railroad workers as a whole lose by this policy. Transportation is no longer a monopoly, and the railroad part of it should no longer be regulated as such. (There is no indication that such regulation is even contemplated for highway transportation.) Since the industry is no longer a monopoly, it should tolerate monopoly policies, including those of labor, no more than it is compelled to do by law and by the wise gentlemen of the Interstate Commerce Commission who believe they know so much more about what is good for the railways than the managements do.

Obstacles to Free Enterprise in Transportation

Free enterprise in the transportation industry is entirely compatible with the regulation of motor carriers, which Mr. Lippmann deplores. But it is not compatible with subsidized highways and waterways, which he neglects to mention. It is not compatible with monopoly wages for railway labor, nor rate regulation such as the long-and-short-haul clause which discriminates against the railroads in favor of their rivals, nor social security legislation and politically forced "agreements" which provide more costly protection for railway employees than that enjoyed by other transport workers.

The transportation situation is certainly important enough to warrant the attention of such moulders of public opinion as Mr. Lippmann. But discussing it is not a task to be entered upon lightly. Its complexities are a veritable jungle, and clear vision is further obscured by an immense fog of propaganda, emitted by a multitude of special interests. So the critical and disinterested observer, whatever his talent and zeal, will find that of these qualities the best will be none too good if he is to succeed in bringing to light objective truth as a basis for sound public policy.

Five-Months Equipment Orders Above 1935 Totals

Orders for 9,677 freight cars reported in May issues of *Railway Age* brought the total domestic orders for the first five months of 1936 to 22,240, or 3,541 cars in excess of the 18,699 ordered for domestic service in the United States during the entire 12 months of 1935.

Thus the current year's commitments for all three classes of rolling stock are now above those for the entire year 1935, since, as pointed out in the *Railway Age* of May 9, the 1936 locomotive and passenger-train car orders had previously exceeded last year's 12-month totals. Also, 1936 rail orders continue their approach to 1935's 12-month figure, being already about 92 per cent of that total.

In addition to being approximately 17 per cent in excess of last year's 12-months figure, as indicated above, the 1936 total of freight cars ordered to date is more than 15 times the 1,432 cars involved in orders reported during the comparable five months of 1935. Furthermore there were outstanding on June 1 inquiries for 4,575 freight cars, which, when converted into orders, will bring this year's total also above that for the entire year 1934, thereby making 1936's volume of business in this category greater than that for the entire 12 months of any year since 1930. Also, as pointed out in previous discussions, there has been a 1936 export order for 400 box cars, as compared with only 110 freight cars ordered here for export throughout last year.

During May orders for 10 locomotives—all steam—were placed. This brought the 1936 total to date to 98, including 86 steam locomotives, but excluding power units for four streamlined trains. During the entire 12 months of 1935 a total of 83 locomotives was ordered; included were orders for 28 steam locomotives, or less than one-third the number of this type ordered thus far in 1936. During the first five months of 1935 orders for only 13 locomotives—9 steam and 4 of other types—were reported. At the close of last month inquiries for 21 steam locomotives were outstanding.

The situation with respect to 1936 passenger-train car orders remains the same as last month, no additional orders having been reported in May. At the close of April, however, 1936 orders had been reported for a total of 87 passenger-train cars, as compared with the 63 ordered during 1935's entire 12 months. In addition there are the 1936 orders for five streamlined trains, as compared with three such trains ordered in 1935, and there were outstanding on May 31 inquiries for 29 passenger-train cars.

Rail orders reported during May totaled 7,360 tons, bringing the 1936 five-month total to 457,485 tons as compared with the 495,300 tons placed throughout last year.

More Activity in Maintenance of Way

Much emphasis is being placed, and properly so, on the increasing orders for cars and locomotives as an evidence of the recovery that is taking place in railway earnings and in railway purchases.

Although less publicized, evidences of increased activity are equally pronounced in the field of roadway betterment and maintenance. Here the most readily available index is rail purchases. Because of the fact that much rail is laid during the late winter, a season's rail purchases normally begin in October. Since October 1, 1935, the railways have already ordered 658,000 tons of rails, as compared with only 262,000 in the comparable period a year ago. With these orders go corresponding purchases of such accessories as rail joints, tie plates, rail anchors, bolts, spikes, etc. Furthermore, increased purchases of rail are almost invariably accompanied by larger expenditures for the wide variety of other activities that go to make up a maintenance program.

Especially active this season has been the purchase of work equipment. For six years the roads have been carrying on with the equipment which they possessed in 1929, using it until it wore out, but failing to replace it. This year's programs are bringing the roads back in the market for rail laying machines, adzing machines and a wide variety of other types of work equipment.

The rising trend of maintenance of way activities is shown also by the total expenditures for maintenance of way and structures. During the first four months of this year, expenditures exceeded those of 1933 by more than 40 per cent and those of a year ago by more than 15 per cent, and the ratio of increase is growing as the year develops. The increases in individual months over the corresponding months of last year have ranged from 10 per cent in January to 17 per cent in April.

While this increase in the outlay for the upkeep of the fixed properties is primarily a result of the upturn of railway earnings, it is a reflection also of a growing realization of the extent of the deferred maintenance, especially the accrued renewal requirements. Statements in justification of a low level of expenditures for maintenance on the ground that the physical condition of the properties is adequate for the volume of traffic handled, are far less common today than they were a year or two ago. Maintenance officers are realizing with increasing unanimity that the demands are just as urgent for track materials, tools and work equipment as for rolling stock. Furthermore, with the increasing trend towards higher speeds for passenger and freight trains alike, railway managements are recognizing that these higher speeds can be maintained only to the extent that maintenance keeps pace with the increasing demands made upon the track.

Impact on Bridges — An Achievement in Research

Removal of uncertainties permits of closer computations in the rating of old spans and will save many an old structure slated for removal

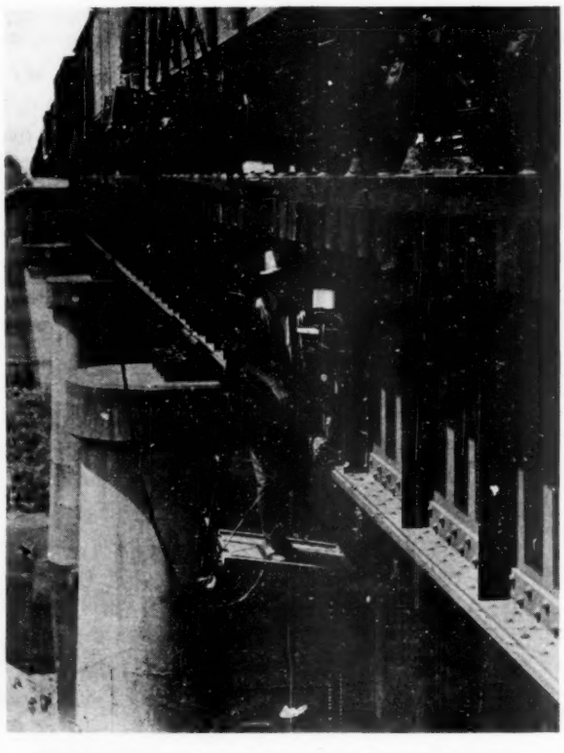
APPLICATION of the rules for rating existing iron and steel bridges, adopted at the recent convention* of the American Railway Engineering Association, will show that many bridges are capable of carrying heavier loads than were permitted under the earlier rules for rating bridges. It was shown in the discussion of this report that the economies thus to be realized must be ascribed to the inclusion in these new rules of a much more accurate method of determining the impact resulting from the movement of locomotives and cars over a structure, but little was said to bring out the epoch-making nature of this innovation or to convey a real conception of the background of painstaking research that made it possible.

These rules for rating old bridges set forth the procedure to be followed in determining whether an old structure is of adequate strength to carry the locomotives and cars that it is desired to move over it. And among the various provisions of these rules none is of greater importance than those concerning the determination of impact, because the magnitude of the impact effect of moving equipment has long been the chief factor of uncertainty confronting the investigator.

The Oscillation of Bridge Spans

The effect of impact on a bridge span is the consequence of harmonic vibrations set up by the sudden application of live loads, causing the span to vibrate in a vertical plane, like the strings of a musical instrument. Such vibrations may be amplified to a dangerous extent when subjected to repeated impulses that synchronize with the period of vibration of the span. The knowledge of this phenomenon is of long standing—for centuries it has been customary to require troops to break step when crossing bridges.

However, it was not until the advent of the steam locomotive that the problem of impact on bridges became a major factor in the design of new bridges or in the investigation of old ones. This is owing to the necessity for providing some means for balancing the reciprocating parts, namely, the pistons, piston rods, cross-heads and some portion of the weight of the main rods. The only practical means ever discovered for doing this in a two-cylinder locomotive is to apply additional weight to the counterweights provided on the drive wheels to offset the eccentric loads of the rotating side rods, crank pins and the rotating part of the main rods. As any weight so applied interferes with the balancing of the rotating parts, it has been designated as the "overbalance" and it is this portion of the counterweights that delivers a hammer blow to the track. This hammer blow increases in magnitude in proportion to the square of the speed at which the drivers revolve. However, as some counterbalancing of the reciprocating parts is necessary to preclude excessive nosing action of the locomotive, the designer is confronted with two conflicting requirements, so that the only answer has been a compromise—to avoid excessive overbalance of the revolving parts, only a portion of the weight of its reciprocating parts is counterbalanced—the proportion ranging from one-fourth to two-thirds, although one-half is the commonly used figure.



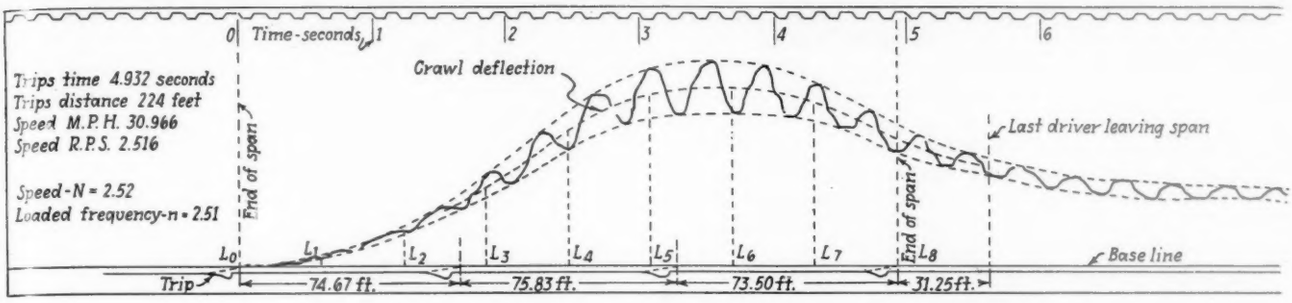
Taking Deflectometer Readings on a Deck Girder Span

Better Design of Locomotives

However, in spite of these efforts to reduce the overbalance, it is of such magnitude as to comprise a formidable factor in the stresses to which tracks as well as bridges are subjected. The amount of impact is directly proportional to the amount of overbalance. A more recent approach to the problem is to decrease the weight of the reciprocating parts by the use of high-strength alloy steels, a measure of the opportunity in this field being afforded by the results obtained in the Hiawatha locomotives of the Chicago, Milwaukee, St. Paul & Pacific, in which the weights of the reciprocating parts have been limited to $\frac{1}{280}$ of the weight of the locomotive, compared with values ranging from $\frac{1}{146}$ to $\frac{1}{215}$ in some 300 locomotives that came under observation in a recent series of impact tests.

There are also other sources of impact, such as track irregularities, rolling or swaying of cars and locomotives and vertical oscillations of the sprung weight of the equipment. All of these were early recognized as having an influence on the design of bridges, with the result that impact allowances, either in the form of lower live-load stresses or in the application of an impact factor to the live load, were introduced

*Railway Age of March 14, page 459.



Deflections and Oscillations of a 224-ft. Through Truss Span

The impact effect of the hammer blow is represented by the vertical distance between the dotted line through the tips of the oscillations and the crawl deflection line.

from the very beginning of rational bridge design practice. But all this was little more than pure guesswork—there were no scientific experimental data on which to found reliable conclusions. In these circumstances, the impact allowances had to be liberal, and, as is now known, they were generally in excess of actual requirements.

Early Investigations

The earliest recorded effort, in this country, to conduct an analytical and experimental study of the effect of locomotive hammer blows on railroad bridges was made by Professor S. W. Robinson, who conducted some tests on the oscillation of bridge spans and recorded his conclusions in a report to the Railroad and Telegraph Commissioner of Ohio in 1885. He offered formulas for computing the vibration frequency of spans and called attention to the amplification of the oscillations that is possible when the speed of the locomotives is such that the hammer blows are applied in synchronism with the vibrations of the span.

Other investigations were carried on subsequently in England, France and Austria, and in 1899 Professor F. E. Turneaure, later dean of the College of Engineering, University of Wisconsin, conducted tests on a number of railroad bridges in which he recorded the vibrations produced by trains moving at various speeds. It was because of this pioneer work that he was selected to conduct a much more extensive study for the American Railway Engineering and Maintenance of Way Association (now A.R.E.A.), that formed the basis for a report in the proceedings of that association for 1911 and which resulted in the adoption of a revised formula for impact in the specifications for steel railway bridges. This new formula gave appreciably lower values for impact for spans greater than 100 ft. than those given by the older formula, and thus made it possible to effect appreciable economies in bridge design.

Dean Turneaure's report included a presentation of the mathematical principles involved in the relation of pulsating loads to the span oscillations, but this was not carried to the point of developing a practical application of these principles to actual problems of design or the investigation of old bridges. As a consequence, the use of the test data was confined to the plotting of an "envelope" curve on a chart of the observed impact percentages, this curve then forming the basis for the development of the impact formula adopted.

The British Investigation

This report excited world-wide interest and stimulated the pursuit of similar investigations in India and subsequently in England, where comprehensive research was conducted by the Committee on Bridge Stresses of the Department of Scientific and Industrial Research. This last named study enjoyed the benefit of the work on the theory of vibrations in structures carried on by Professor C. E. Inglis of Cambridge University and studies along similar lines conducted independently by Professor S. Timoshenko of the University of Michigan, with the result that it was fruitful of the first theoretical analysis of the effect of all the forces acting on a bridge.

Important among the results of this study, which was completed in 1927, was the determination of the magnitude of the "damping" effects, which may be described as the resistance offered by the span to the forces that are causing it to oscillate and which bring it to rest after these disturbing influences have abated. Damping is recognized as originating from two principal sources, elastic friction of the material in the span and the frictional resistance of the end bearings which prevents the free movement of the expansion end of the span. There is still another important damping influence in the springs of the locomotives and cars, owing to the fact that the springs come into action under some conditions of span oscillation. As this damping effect is obviously an important factor in any exact determination of impact, this development marked a step forward in the investigation.

The report of the Committee on Bridge Stresses was studied carefully in this country, but it soon became apparent that the practical recommendations arrived at for English bridges were not directly applicable in American practice because of the marked differences between American and English bridges and rolling stock. On the other hand, it was realized that the report pointed the way to a more thorough-going investigation of the behavior of bridges under moving loads than had been undertaken previously.

Fortunately, the opportunity for such an investigation of bridges in this country soon presented itself. The Cleveland, Cincinnati, Chicago & St. Louis was confronted with a perplexing problem with respect to certain bridges that were appar-

The work done by the railways to determine the impact of moving locomotives and cars on bridges is one of several answers that can be given to those who criticize the carriers for neglecting research. While the present knowledge of impact is the result of world-wide investigations, the fact remains that Dean Turneaure's epoch-making studies for the A.R.E.A. a generation ago stimulated investigations by others and, that American railways are particularly indebted for the investigations conducted by J. B. Hunley for the Big Four, and for the monograph in which he presents a review of the current knowledge of this involved subject.

ently in good physical condition, but which, when rated in accordance with generally accepted rules, imposed serious restrictions on their use, either by prohibiting the movement of certain locomotives over them or by the imposition of slow orders. It was on this account that J. B. Hunley, engineer of bridges and structures, proposed the conduct of a series of tests, with the thought that the application of the principles enunciated in the British report might disclose lower actual impacts than those provided for in the prevailing rules. Authority for these tests was granted and when the ensuing investigation of 15 bridges clearly demonstrated that most of these structures could be subjected to a desired increase in loading without speed restrictions, he was authorized to undertake a more comprehensive study that eventually embraced 39 steel bridge spans and the taking of data on about 2,100 train movements.

The results of this expanded investigation, together with Mr. Hunley's painstaking study of the underlying theory, convinced him that current assumptions as to the impact imposed by trains on most bridge spans gave excessively high values. Accordingly, he brought his conclusions to the attention of the Committee on Iron and Steel Structures of the American Railway Engineering Association which was then engaged in a complete revision of the association's specifications for the design of steel railway bridges. Acceptance by the committee of his findings resulted in a new formula for computing impact that gave lower values for spans of 30 ft. or more, than those given by the formula adopted after the Turneaure investigation, the average reduction being about 25 per cent. It is probably not fair to ascribe this reduction entirely to the advanced knowledge of impact phenomena; part of it must be credited to reduced impact effects resulting from improved counterbalancing practice. However, it is only because of the Big Four investigation that the effects of such improvements could be realized.

Another practical result of the investigation was the procedure for the determination of impact embodied in the rules for rating old bridges cited in the first paragraph of this article. The determination of the impact to be added to the live loads is of far greater importance in the investigation of an old bridge than when designing a new one. In the latter case, liberal allowance is made for future changes in the character of the live loads, for loss of metal by corrosion during the life of the structure and other factors that cannot be anticipated when a new bridge is built; therefore minor variations in the impact allowance do not seriously affect the resulting design.

This is not true in determining the maximum load that can be carried with safety by an old bridge. In this case the criteria are the maximum safe stresses to which the material of which it is constructed can be subjected and, as nearly as possible, the forces imposed by the actual loads to be applied. To do otherwise would involve needless expenditures for replacements or the imposition of unwarranted slow orders.

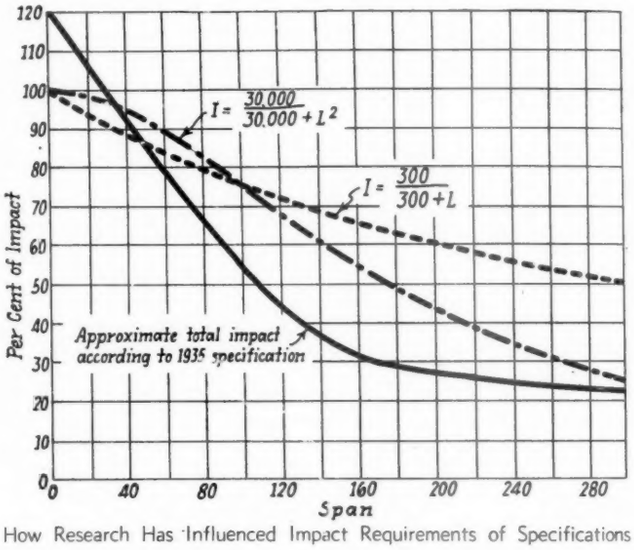
The new rules for rating old bridges embody a procedure for the determination of impact that had not previously been developed for routine application, namely, a method for determining the maximum impact that will result from the hammer blow applied by a *particular* locomotive moving at any speed over a *particular* span. The basis for this procedure, as well as a presentation of the theory and mathematics involved, and an account of the field investigation on which they are founded, are set forth in a 200-page monograph by Mr. Hunley, published by the American Railway Engineering Association as Bulletin 380, October, 1935, from which much of the material in this article was taken. The theory involved is one that does not lend itself to brief treatment, but a statement of a few salient facts is merited.

The frequency of the natural vibrations of a uniformly loaded simple span is expressed by the formula

$$n = \frac{\sqrt{12.4}}{d}$$

in which n is the number of vibrations per second and d is the total deflection at mid span in inches. From this it is seen that a short span will have a higher frequency than a long span. Similarly, the frequency of a deep stiff span will be higher than that of a shallow, flexible one and it will be higher in a lightly loaded span than in a heavily loaded one.

Because of the latter fact the frequency of a span changes as a train moves onto it; for example, the frequency of a given 40-ft. girder span supporting a locomotive was found to be about 4 oscillations per second, compared with about 13 oscillations per second for the span when not loaded. A 148-ft. through truss span had a frequency under load, of 2.9, compared with a frequency without load of 4.87.



How Research Has Influenced Impact Requirements of Specifications

Dotted line represents graph of Schneider formula adopted by A.R.E.A. in 1905, dot-and-dash line represents formula adopted in 1917, and full line indicates approximate values of requirements of 1935 specifications. Portion of this line extending above 100 per cent applies only in the investigation of old structures

Some General Observations

Taking simple railroad bridge spans as a whole, the natural unloaded frequency varies from 20 or more oscillations per second for a 30-ft. span, to about 2 per second for spans of 500 ft. or longer. This range of frequencies has an important bearing on the magnitude of the impact resulting from the movement of a locomotive over a span, since the impact effects of the hammer blows vary with the square of the speed and they are magnified when delivered in synchronism with the loaded or partly loaded frequency of the span.

Owing to practical limits on piston speeds, the speed of a steam locomotive does not ordinarily exceed seven driver revolutions per second. Consequently, magnification due to synchronism is possible only for frequencies of about seven per second or less. For this reason the impact resulting from the hammer blow of locomotives on spans less than about 30 ft., is confined to that resulting from the centrifugal force of the overbalance without any magnification. For such spans the percentage

of impact is equal to the square of the revolutions of the drivers per second, times the ratio of the deflection resulting from the centrifugal force of the overbalance at one revolution per second to the deflection due to the static live load. In other words, the formula is

$$\text{Impact} = \frac{Dh\ N^2}{D}$$

For spans longer than about 30 ft. synchronism is possible and the mathematics involved are far too complex for demonstration here. However, an idea of the procedure is afforded by the following formula:

$$\text{Impact} = \frac{Dh\ N^2}{D\ 2\ pn}$$

It will be observed that this is the same formula as the one given above, with the addition of the expression (2 pn) in the denominator. This is known as the damping factor and is a function of the resistance imposed by the span to the forces tending to make it oscillate, while $\frac{1}{2\ pn}$ expresses the degree of magnification of the hammer blow effect.

This is the formula for the maximum impact to be expected on a span resulting from the hammer blow of a locomotive at synchronous speed. However, it applies only when the vibrations are neither large enough nor rapid enough to overcome the friction of the locomotive springs; that is, when the weight of the entire locomotive oscillates with the span. This condition ordinarily obtains for many spans, but the effect of spring action must be taken into account in spans from 30 to 175 ft. in length. This involves mathematical complexities that cannot be entered into here, as is the case, also, with the procedure to be followed in determining impact at speeds other than those producing synchronism. However, the processes involved lend themselves readily to practical application by anyone qualified to deal with the mathematics of structural design.

This exposition of the theory of impact resulting from the effect of the overbalance of locomotive drivers, represents but a bare outline of the principles involved. However, it should serve to demonstrate that the magnitude of the impact is influenced by such variables as the intensity of loading, the length, stiffness and weight of the span and the counterbalance characteristics of the particular locomotive. From this it follows that generalization in the estimating of impact without regard to the characteristics of the particular locomotive or span involves the selection of maximum observed values, which in some cases may be appreciably higher than those that would be ascertained if the more exact method were applied to the particular span for a particular locomotive.

Conclusions

Following is a summary of the conclusions set forth in Mr. Hunley's monograph:

The tests carried out by the Big Four embraced a sufficient variety of structures to insure that the conclusions reached may be applied with confidence to simple steel bridge spans of all ordinary lengths. Further investigations could be conducted with profit to determine the extent to which the impact is reduced on ballast floors as compared with open-deck floors. The same comment applies also to similar investigations on reinforced concrete spans. In addition, there is a need for the investigation of the impact effect of low joints and other irregularities in track, particularly on short spans, the lurching of cars, and tests that would throw further light on the effect of the friction of locomotive springs in contributing to the damping of span oscillations, as well as means of improving the counterbalancing of locomotives with a view to decreasing the impact on tracks as well as bridges.

The American Railway Engineering Association has provided for a continuation of the study of impact on bridges by a Special Committee on Impact, of which O. F. Dalstrom, engineer of bridges of the Chicago & North Western, is chairman, and which, in addition to Mr. Hunley and Dean Turneaure, includes other members of the association who have had an active part in the interpretation of the tests conducted on the Big Four, as well as members of the engineering faculties of the Universities of Wisconsin and Illinois. A small appropriation has been made available for the initial work of this committee by the Association of American Railroads.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended May 23 totaled 683,406 cars, an increase of 1,959 cars over the total for the week before and an increase of 85,010 cars, or 14.2 per cent, as compared with the total for the corresponding week of last year. All commodity classifications except coal and livestock showed increases as compared with last year and all except merchandise, coal, and livestock showed increases over the preceding week's figures. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading

For Week Ended Saturday, May 23

Districts	1936	1935	1934
Eastern	152,118	143,161	144,329
Allegheny	137,608	120,522	127,098
Pocahontas	46,484	40,627	43,031
Southern	94,207	83,156	87,285
Northwestern	106,435	85,023	90,123
Central Western	93,961	80,065	86,537
Southwestern	52,593	45,842	47,587
Total Western Districts	252,989	210,930	224,247
Total All Roads	683,406	598,396	625,990
Commodities			
Grain and Grain Products	31,365	25,812	28,253
Live Stock	11,153	11,341	16,313
Coal	106,139	112,742	110,057
Coke	8,191	6,014	6,974
Forest Products	33,414	24,081	26,011
Ore	46,729	31,284	29,826
Merchandise L.C.L.	162,096	157,234	164,169
Miscellaneous	284,319	229,888	244,387
May 23	683,406	598,396	625,990
May 16	681,447	582,950	612,331
May 9	668,935	575,020	602,798
May 2	671,154	568,927	605,246
April 25	666,181	558,936	609,704
Cumulative Total, 21 Weeks	13,156,999	12,132,312	12,351,993

Car Loading in Canada

Car loadings in Canada for the week ended May 23 totaled 44,004, as against 44,923 cars for the previous week and 41,065 cars for the twenty-first week in 1935, according to the summary statement of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
May 23, 1936	44,004	24,352
May 16, 1936	44,928	24,551
May 9, 1936	45,141	25,063
May 25, 1935	41,065	21,238
Cumulative Totals for Canada:		
May 23, 1936	901,934	497,573
May 25, 1935	891,577	475,635
May 26, 1934	871,704	494,326

Power Plant on Wheels*

The steam locomotive considered as a traveling power plant and compared with a stationary plant of similar capacity

By A. Lipetz,
Chief Consulting Engineer, American Locomotive Company

A VEHICLE containing a power plant and wheels which can be made to rotate while rolling on rails and thus propel the vehicle itself and cars attached to it, in short, a self-propelled power plant on wheels, is called a locomotive. The definition given includes the steam locomotive, both of the reciprocating engine and turbine type, and the Diesel locomotive, of the Diesel-electric or any other type, but excludes the electric locomotive, because the latter does not carry the power plant. Therefore, by some authors, mainly German, the electric locomotive is not considered to be a locomotive at all and is called the "electromotive."

Peculiarities of the Steam Locomotive

It is not necessary to refer to elaborate statistical data to prove that the bulk of railroad traffic is handled by steam locomotives. The main reason is that as existing steam locomotives have been built to last a long time, say 15 to 25 years and are now with us, it is natural for them to be still doing useful work. Fifty thousand steam locomotives can not be put on idle tracks or scrapped even if better machines were developed. Nevertheless, we should not overlook the fact that when new railroad motive power is ordered, small as it sometimes may be more steam locomotives are being built than any other kind. During the six years of depression 1930-1935, 1,149 locomotives were built in this country, of which 979 were for use in the United States. This number is divided among various kinds of power in the following way:

Type	Number	Per cent
Steam	623	63.7
Electric	252	25.8
Diesel-electric	104	10.5
Total	979	100.0

The electric locomotives includes 150 for the outstanding electrification of the Pennsylvania Railroad, which may have been somewhat prompted by the spirit of the public work projects of late years. It is interesting to note that as soon as business showed signs of improvement, steam locomotives again became a large part in the allotted orders. During the first two months of 1936 American locomotive builders received orders for 42 steam locomotives; no electric locomotives were ordered, and an order for one Diesel-electric was placed. Steam locomotive builders are now busier than at any time since 1931, and new locomotive types are being evolved.

Longevity

There are several remarkable things about the steam locomotive. One is its longevity; it is over 100 years old and is still going strong. Few machines can boast such a span of life. The Watt steam engine has been superseded by the steam turbine and the modern steam boiler bears little resemblance to the primitive boiler of a hundred years ago. But the modern locomotive embodies the same principles that spelled success for the Stephenson "Rocket" at the Rainhill trials of 1829. It is true that the locomotive has gone through a long period of evolution and has acquired many improvements and refinements, but substantially it still has the rectangular double-walled firebox and the fire-tube boiler of the Seguin-Booth design, simple-expansion cylinders, mostly two per one rigid frame (one cylinder on each side as in the "Rocket"); an induced draft appliance for the boiler, operated by exhaust steam from the cylinders as developed by Trevithick and employed by Stephenson; a direct connection between the cylinder pistons and the wheels journaled in the engine frame; and smooth tires on wheels for direct adhesion to rails by friction, following the principle demonstrated by Hedley in 1814.

Simplicity and Economy

The second remarkable feature of the present-day locomotive is its simplicity and adherence to its original design, which, I dare say, came out of Stephenson's hands in a classical and perfect form, something like a Beethoven symphony. Hundreds of attempts were made during the past century to improve upon Stephenson's design (some in recent times), but most of the improvements did not survive a trial even in a single model and copies were never built; only some of the novelties could stand the test of time, usually a very short time, after which they were abandoned. Their ephemeral success was sometimes due to local, political, national and other irrevelant causes, but in 106 years the locomotive invariably has reverted to its simple Stephensonian shape. The only essential change made in the locomotive was the addition of the superheater, now universally accepted.

To comprehend the genius of George Stephenson, it suffices to say that his illustrious predecessor, James Watt, could not see a steam engine without a low pressure boiler and a condenser, and as he did not visualize a steam carriage thus equipped, he did not believe in the possibilities of steam traction on rails. He militated strongly against the high pressure of 50 lb. per sq. in. which he considered dangerous; that pressure was later used in the Stephenson locomotives. In one of his earlier years, 1784, Watt took out a patent for a locomotive with a complicated drive which consisted of a sun-and-planet wheel transmission and two sets of gears, different in their proportions. He provided the two gears in order to adapt the power of the locomotive to the variable resistance of the road. Thus, even Watt did not have a clear picture of the power resulting from the expansive properties of steam, of which Stephenson was cognizant, as evidenced by the locomotives with direct drive which he built even prior to the "Rocket."

The third remarkable thing about the steam locomotive is the economy of its operation in spite of the alleged low overall efficiency. People familiar with thermodynamics and efficiencies of prime movers and

* Abstract of a paper before the Metropolitan Power Plants Committee New York, March 12, 1936.

heat engines, especially promoters of wild schemes, usually harp on the low efficiency of the steam locomotive. True, the efficiency, thermodynamically speaking, i.e., measured by the ratio of the B.t.u. of useful work at the drawbar of the tender to the B.t.u. in the fuel burned in the firebox, is low. In a switching locomotive with large stand-by losses it may be as low as 3 to 4 per cent; in a road locomotive the overall efficiency is 6 to 7 per cent; under favorable conditions—on a test bed it may go to 8 per cent, and with exceptionally good designs even to 8½ per cent. However, much as the efficiency figure is important, it tells only part of the story. The whole story must include the economic utilization of the locomotive as a whole. In the economics of locomotive operation the fuel cost is only one item of several equally important. Other items are: cost of maintenance, lubrication, handling in engine houses, crew wages, etc. But most important are: (1) reliability, and (2) availability.

Reliability and Availability

Reliability means that a locomotive should not get unduly out of order while pulling trains. A failure on the road, causing delay of trains, and disorganization of traffic, costs much more than ordinary economy in the operation of dozens of locomotives can amount to. Therefore, if an economical turbine or Diesel locomotive should have complicated accessories which are likely to get out of order, causing failure on the road, it will not be acceptable.

Availability means that a locomotive should be available as much as possible when required to do useful work. It is measured by the ratio of the average number of hours when the locomotive is able to perform work, to the number of hours of offered work. Availability is closely related to simplicity regarding maintenance. If a complicated although perhaps an ingenious and economical machine, needs frequent attention, fueling, cleaning, replacement of parts that requires much time, and so on, the availability is low. Turbine locomotives, especially those with condensers, have low availability and, therefore, are not practical although they are twice as economical as reciprocating steam locomotives. Road Diesel locomotives have not shown great availability thus far and, therefore, are still in the experimental stage. On the other hand, switching Diesel locomotives have an availability close to 100 per cent and, therefore, in switching service the Diesel locomotive has established itself as a useful motive power unit.

Closely related to simplicity regarding maintenance is simplicity of operation. This implies that the locomotive should not have too many handles, valves, gages and other parts that require the driver's attention and tax his skill beyond what an ordinary engine driver is expected to do. Being intensely occupied with watching signals, listening attentively for any suspicious sound in the behavior of the locomotive in the midst of the noise and clatter of a rolling and roaring engine, the crew has no physical possibility of attending to extra duties except the most elementary and customary ones. If there is an additional unusual handle or valve, the driver is unable to attend to it, no matter how important it should be for the proper operation of the locomotive. If it is important it should be made automatic, provided the automatic action can be made reliable in the foregoing meaning of the word.

The fourth remarkable peculiarity of the steam locomotive is compactness of design, as exemplified by the power by any unit of reference: per cubic foot of occupied space, per pound of weight of the installation, per square foot of area of support, per dollar of investment, etc. Accurate comparable figures are not always available. Recently in "Power" I came across a tabulation of new steam plants placed in operation in this country in 1935.†

It contains 11 utility, 9 municipal, 77 industrial plants, and 10 plants in institutions—a total of 107 steam plants. Only four plants have a boiler pressure of over 1,000 lb. per sq. in.; 44 plants have boilers carrying pressures between 300 and 1,000 lb., 15 plants between 200 and 300 lb. per sq. in., and 34 plants, or about one-third of the total, below 200 lb., a pressure which in modern locomotive practice has already been discontinued. The tabulation is quite incomplete, but here are several figures taken at random for boilers with pressures between 250 and 300 lb. per sq. in., which is the pressure usually carried in newly built locomotives.

Location of plant	Pressure, lb. per sq. in.	Capacity of boiler, lb. per hr.	Heating surface, sq. ft.	Economizer heating surface, sq. ft.	Air preheater, sq. ft.	Furnace volume, cu. ft.
Whippany Paper Board Co.	250	66,000	7,500	4,200	....	3,000
South Pittsburg Water Works ..	300	40,000	3,894	....	....	1,549

In the first case the evaporation per sq. ft. of heating surface is 8.8 lb. per hr., in the second 10.3 lb. per sq. ft. per hr. In locomotives, evaporation per sq. ft. of heating surface varies from 12.6 to 14.2 lb. per hr. or about 35 to 45 per cent more. Per cu. ft. of furnace it is respectively 22.0 and 25.8 lb. Per cu. ft. of locomotive firebox volume evaporation varies from 70 to 120 lb. per hr., or about 220 to 360 per cent more.

Slightly more complete figures can be found on the Hell Gate steam plant, which carries 400 lb. per sq. in. and consists of two units. Each unit has a capacity of 1,000,000 lb. per hr. and a heating surface of 53,926 sq. ft.; this corresponds to an evaporation of 18.6 lb. per sq. ft. per hr. This seems to be higher than the usual locomotive evaporation, but these units have economizers and air preheaters, with 18,400 sq. ft. of economizer heating surface and 60,476 sq. ft. of air preheating surface to each unit, making a total of 132,802 sq. ft. heat absorbing surface without superheater.‡ If referred to this figure, the evaporation will be only 7.5 lb. per sq. ft. per hour. For a locomotive, if the heating surface of the feedwater heater which takes place of the economizer is added the evaporation figure should be 12.5 to 14.1 lb. per hr., or about the same as counting without the feedwater heater.

The furnace volume of each unit of the Hell Gate boiler is 42,255 cu. ft., corresponding to an evaporation of 23.6 lb. of steam per cu. ft. per hr., as compared with 70 to 120 lb. per cu. ft. of firebox volume in a locomotive.

The cubic contents of one unit of the Hell Gate boiler is 211,003 cu. ft., giving an evaporation of 4.74 lb. of steam per hr. per one cu. ft. of installation. In a locomotive the evaporation, if referred to the volume of the whole boiler is about 22 lb., or 4.7 times more.

Other figures also indicate the compactness of the locomotive boiler design. For instance, the number of B.t.u. per cu. ft. of firebox volume varies in a locomotive, with and without a stoker, from 150,000 to 200,000, while in the medium-pressure stationary plants above referred to, the corresponding values are 27,500 to 33,500 or 16 to 18 per cent of the locomotive figure. In the Hell Gate station it is 32,430 B.t.u.

All figures so far cited refer to full-load conditions, both of locomotives and stationary plants. The loco-

† Power, January, 1936, pages 4 and 5.
‡ Steam Plant Engineer, January, 1932, p. 35.

motive, however, is often called upon to work overload, sometimes as high as 40 per cent. True, the boiler efficiency may be then not over 50 per cent but at lower loads efficiencies, including feedwater heaters, 85 to 90 per cent have been recorded.

In the development of locomotives it has been recognized for 20 years that the firebox, as the source of power, should be given ample dimensions. After some fluctuations the grate area measured in sq. ft. has stabilized at about one-fiftieth of the horsepower: a 3,500-hp. locomotive would have a 70 sq. ft. of grate area; a 5,000-hp., an area of 100 sq. ft. At the same time the whole boiler has acquired larger dimensions and for the last 10 years large boiler capacity is the general rule. As a result the locomotive boiler has become more economical and better suited to new conditions of traffic, where higher speeds not only for passenger but also for freight trains are demanded.

It is difficult to state what the average boiler efficiency in a locomotive is as this depends upon the variation in load which is different on various roads and for different trains. But as a fair guess it can be said that the average boiler efficiency of a modern locomotive is about 65 to 78 per cent, closer to the lower limit for locomotives without, and to the upper limit for locomotives with feedwater heaters.

A modern stationary plant may have a higher boiler efficiency, but this is achieved by the use of large size economizers and air preheaters, which simply can not be installed in a locomotive so as to be of much value on account of space limitations. Several attempts of this kind have been made and abandoned.

The superheater is now an inalienable part of the boiler. Although it was first introduced for stationary plants in 1905 it has enjoyed its greatest development in locomotives. The temperature is about 700-750 deg. F. Having a reciprocating engine, the locomotive can not boast of temperatures of 800 to 950 deg. F., which some power plants have, but at least they always have superheaters. For a long time no new locomotives, even of the switching type, have been built without superheaters, although in stationary practice I have noticed in the referred to tabulation of 1935, many new installations of the saturated type.

Engine Part of the Locomotive

The reciprocating engine—meaning the cylinders, pistons, driving mechanism—is the second essential part of the locomotive, the first being the boiler with the superheater. Again, after some fluctuations the engine has reverted to the two-cylinder, simple-expansion type of the first locomotives. In the meantime it has gone through a cycle of evolution, varying in design in accordance with the rise in pressure, and with the introduction of superheat, first with multi-cylinder compounding, and later without it. The thermal efficiency of the steam-engine part of a locomotive at 250 to 300 lb. pressure and 750 deg. F. total temperature, without a condenser, is now about 12 per cent, referred to the rim of the driving wheels. Among latest developments refinements in design of steam passages and the improvement in valve motions have been the great value. The essential improvement, however, which would turn the non-condensing into a condensing engine, has so far not met with any degree of success.

It is of interest to note which of the improvements made in stationary plants have been tried on locomotives and the reasons for which they failed.

The water-tube firebox was probably the first part of the locomotive—except the superheater—influenced by stationary plant practice. During the nineteenth century the boiler pressure rose from 50 lb. per sq. in. to 200 to 225 lb. per sq. in. It was thought that these pressures were about the limit for a radial-stayed firebox, and that for higher pressures water-tube fireboxes would be necessary.

Partly in anticipation of this eventuality, and partly because maintenance of staybolt fireboxes at high pressures had become costly, water-tube fireboxes began to appear. In the United States about a score of locomotives was built for the New York, New Haven and Hartford with McClellon water-tube fireboxes during the period 1916-1924. This boiler was a combination of a water-tube firebox and a cylindrical shell of the conventional locomotive boiler. They were similar to the Brotan fireboxes built in Europe (Hungary, Austria, Germany, Russia) in the early part of this century. None of these were successful, as instead of staybolt troubles of the conventional firebox, eliminated in the Brotan and McClellon fireboxes, other difficulties such as cracking of sheets in the cylindrical part of the boiler arose. All these locomotives, except several on Hungarian railways, were converted into ordinary engines with staybolt fireboxes, although pressures in these boilers were not very high—not over 265 lb. per sq. in.

To the same category belongs the Emerson boiler applied on some Baltimore & Ohio engines. It differs from the Brotan boiler in that better provisions are made for cleaning the tubes from scale. Some of these boilers have been in service for about nine years and seem to be giving good results. The highest pressure carried is 350 lb. per sq. in.

[Elsewhere in his paper the author refers to the Muhlfeld locomotives on the Delaware & Hudson, which have water-tube fireboxes and carry pressures up to 500 lb. per sq. in., and to the Schmidt Multipressure locomotives with water-tube fireboxes, two of which were built in America.—EDITOR.]

Two Ways of Increasing Efficiency

The main reason for the low efficiency of the steam locomotive is the steam cycle with a limited initial steam pressure and exhaust into the atmosphere. In order to raise the efficiency it is necessary to increase the admission pressure, which means to raise the boiler pressure, or to lower the exhaust pressure, i.e., to exhaust the steam into a vacuum condenser. Both ways have been tried, and they resulted in locomotives with high-pressure boilers and those with vacuum condensers.

There are several reasons for the failure of the condensing turbine locomotive. The first is a fundamental one, namely, the turbine is inherently unsuited to work at variable speeds and if directly coupled to the locomotive wheels, which run at different speeds, it can not be economical. The efficiency curve of a turbine has a parabolic shape with zero value at zero speed, maximum value at the optimum speed, and again zero value at some higher speed, approximately double the optimum speed. Ljungstrom and Zoelly, of course realized that; Ljungstrom even shaped his blades so as to flatten the efficiency curve as much as possible, but neither of them evidently did realize the extent to which the speed on a railroad varies. Switching work in a station with a few cars by a turbine locomotive might wipe out all the economy obtained during the trip. Frequent stops and starts would act likewise. Ljungstrom investigated in his laboratory every detail of his turbine locomotive, but he may not have investigated the railway operation characteristics, which are not less important. His research work was the most elaborate ever done in railroad engineering, but still it was incomplete. He overlooked the fact that the reciprocating engine of the conventional

locomotive is better adapted to speed variation than the turbine and that in this adaptability lies one of the secrets of its success.

The second reason is also a fundamental one, although not as grave as the first, namely, the fa t that the turbine is not reversible. This is another disadvantage of the turbine as compared with the reciprocating engine. For reversing, an idle pinion must be inserted in the gear between the turbine and the jack shaft or the first driving axle. This method has been worked out nicely by Ljungstrom, and seems to have given satisfaction. It is, of course, a complication which adds weight and costs money. Another method of reversing utilizes a special reversing turbine which is inserted, when necessary, by means of a clutch; or a third method, the one used on all German turbine locomotives, is possible: the reversing turbine is set rigidly on the shaft of the forward turbine and runs with it all the time, but in vacuum when the forward turbine runs under steam, and vice versa. This scheme is less efficient, as some power is absorbed by running of the reversing turbine all the time in a rather imperfect vacuum.

Thus, the more radical and revolutionary changes in the simple construction of the steam locomotive, in the direction of the latest improvements of the stationary plant, accomplished hardly anything. Only the more modest innovations can be introduced in locomotives, and then they have to be made gradually and must be sufficiently tried out. Feedwater heaters which sometimes at full load save as much as 16 per cent of the steam save less at lower loads and, therefore, are not universally used. The same is true for poppet valves which proved their advantages in some cases and are liked on some roads abroad—this depending mainly upon the variation in load.

Difficulties of Railroad Research—High-Quality Materials

Railroad research, as a rule, is very slow on account of the great variety in operating conditions of the railways. It can seldom be performed on a small scale in a laboratory, not always in full scale on a locomotive testing plant, and in the majority of cases it has to be tried out in actual service, which necessarily calls for a long observation. Such research as the investigation of wind resistance can be made in an aeronautic laboratory (wind tunnel), but even suitability of material can hardly be judged by ordinary tests made in a physical laboratory. Driving axles offer a good example. Although they are made to dimensions calculated in accordance with known formulas of machine design and with the allowable working stresses of the material, the railroad engineer soon discovered from experience several disappointing facts.

(1) That the high qualities, especially of alloy steels as found from laboratory tests on which he thought he could rely, seemingly do not apply to the large sections he has to deal with; (2) that the usual factor of safety is not sufficient to take care of the additional stresses in axles due to vibrations, jerks and side thrusts from the rails; (3) that in spite of all the provisions made for lubrication, the temperatures of the journals run up to 350-400 deg. F. with a maximum sometimes of 800 deg. F.—probably on account of sticking shoes or wedges the distribution of weight between wheels may have become disturbed; (4) that if a small heat check due to overheating should appear on the journal surfaces, it may start a progressive crack and an ultimate fracture and that, in this respect, high-tensile heat-treated alloy steel is more sensitive to heat checks than ordinary carbon steel, and (5) that if a heat-treated alloy-steel piece should have to be replaced in a local railroad shop, a different material may be used, or if the same piece is to be repaired, the heat treatment may not be conducted in the way expected, and the properties of the axle may be entirely changed.

In view of the above, the railroad engineer is rather reluctant to use high quality steels on the basis of laboratory tests or the experience of other industries where smaller sections are used in axles or shafts. Even the experience of the big steam engine and Diesel engine industry can not be very instructive for him, as conditions of work in these engines are not identical with those in a steam locomotive, and besides, in the latter the allowable working stresses are much higher in view of the limited available space.

The locomotive designer must, therefore, have his own experience.

If, after a century of development and research, the steam locomotive returned to the simple Stephenson design of the "Rocket," it is because the simple outlives the complex and affected. It is easy to design a complicated locomotive; it is more difficult to build it; it is still harder to make it work; but it is impossible for it to survive. During the hundred years of evolution, thousands of complicated locomotives were suggested, hundreds of them were built, dozens gave some reasonable service, but only units survived. These are the ones that we are using now in everyday service.

Flexibility of the Steam Locomotive

Four peculiar features of the steam locomotive have been outlined. Now we come to another peculiarity which is probably its greatest advantage, second only to its simplicity. I am referring to the locomotive's flexibility. This is due mainly to the fact that the intrinsic characteristic of a steam locomotive, as represented by its tractive-effort-speed curve, is exactly what it should be for railway work. It has a large value at low speeds—good for starting heavy trains—and a sloping line at higher speeds, corresponding to an increasing power curve necessary for acceleration and overcoming the train resistance which also increases with the speed. This characteristic is the result of the expansive properties of steam and of direct drive, unobtainable, for instance, from a Diesel locomotive without a special transmission, electric or hydraulic. This peculiarity makes the steam locomotive invulnerable against the progress of time and competing power. About 30 years ago, when electric locomotives made their first appearance, it was thought that the steam locomotive was doomed to extinction. Electrification acted only as a spur and an epoch of new improvements and refinement in design began which resulted in steam locomotives up to 5,000 hp. and speeds close to 100 m.p.h. When recently the drive for high speed began and the German Diesel-electric train "Flying Hamburger" was emulated in this country by the light-weight Union Pacific aluminum train and the Burlington stainless steel "Zephyrs," the steam locomotive proved that its flexibility did not fail in this challenge.

In the latter part of 1934 the Chicago, Milwaukee, St. Paul & Pacific pulled a standard train weighing 388.5 tons, or more than three times the weight of any of the new Diesel electric trains, with a regular non-streamlined locomotive at an average speed of 76.67 m.p.h., comparable with those of the Diesel-electric trains. During this run speeds over 100 m.p.h. were attained. Following this, on January 2, 1935, the Chicago & North Western put in service the "400" steam trains, which is now operating regular service between Chicago and St. Paul, 408.6 miles in 390 min., at an average speed of 62.9 m.p.h. The Chicago, Milwaukee,

St. Paul & Pacific placed in regular service last spring a pair of trains, known as the "Hiawathas," between Chicago and the Twin Cities, a distance of 410 miles in 390 min., an average speed of 63.4 m.p.h., with six stops. The "Hiawatha" locomotive, of which two were built and a third is now being built by the American Locomotive Company, is of the Atlantic or 4-4-2 type. The engine has only two driving axles, in view of the comparative lightness of the train (340 to 460 tons).

Thus the steam locomotive after a hundred years of development in power, efficiency and speed is again adapting itself to changing conditions of transportation. Moreover, it should be remembered that this remarkable machine can burn the cheapest fuel, can be built of cheap material, and can be simply operated without the multitudinous appurtenances of a modern power plant. This plant on wheels, moving on rails, is subjected to all kinds of bumps and jerks, effects of bad weather, sand and grit, dust and dirt. Furthermore, it does not get the vigilant care of a permanently assigned host of engineers, machinists and oilers of a modern power house; it is entrusted, for a certain number of hours at a time, to a two-man crew, soon to be replaced by another crew, which at the same time is burdened by observing signals, obeying rules of traffic, and—between trips—to engine-house authorities, hostlers and mechanics.

Pooling of Grain Elevators Again Urged

WASHINGTON, D. C.

THE federal co-ordinator of transportation, Joseph B. Eastman, on May 29 released a supplemental report prepared by his research assistant, J. A. Little, of Lincoln, Neb., relating to the leasing of grain elevators by the railroads. The original reports were made in August, 1934. This report deals further with the leasing of railroad-owned elevators and the use of such elevators as transportation facilities and in grain marketing. It is stated that large grain firms at Chicago, Milwaukee, Kansas City, St. Joseph, Omaha and Council Bluffs have, for years, had an unfair advantage over competing grain buyers because of the low rentals paid by the favored grain dealers for the use of railroad elevators. Unwise and excessive competition among railroads which transport the grain is termed the motive for making leases which "unjustly discriminate in favor of the big grain dealer who controls the routing of grain shipments." The low rentals charged are condemned as an indirect rebate to firms who lease railroad elevators.

The existing leasing practices are declared to be wasteful, resulting in loss of revenue to the railroads, increased terminal costs due to cross-hauling grain, and restricted use of the elevators to the disadvantage of both the owning railroads and the public. To abate this excessive competition and the resulting practices, the report renews the proposal, made in the original report, that the elevators owned by railroads at Chicago, Milwaukee, Kansas City, St. Joseph, Omaha and Council Bluffs be pooled for unified operation and control. It is conceded that the interested railroads and shippers may be able to discover an acceptable substitute for the proposed pooling. In considering such alternatives interested parties are asked to propose plans which will insure adequate returns to the railroads for use of their elevators and at the same time result in the most efficient use of such facilities in the service of the owning railroads and the public on terms of equality to all who use such elevators and upon a basis which will ensure the retention as well as collection of lawful freight charges applicable to the grain transported. It is contended also that freedom of competition among grain buyers would be safeguarded by divorcement of public warehousing operations from grain merchandising.

Co-ordinator Eastman has referred this report to the railroad Regional Co-ordinating Committees with a statement concurring in the conclusion that the leasing practices are unlawful as a survival of rebating and stating his intention to direct the attention of the Interstate Commerce Commission to the violations of the law. He recommends further consideration of the whole problem and especially the suggested pooling arrangements by the Regional Co-ordinating Committees.

In his letter to the committees he said in part:

At the time that they were sent to you, the reports were made public, with the result that the lessees of these railroad-owned grain elevators asked for an opportunity to submit comments and criticisms. I was glad to give them such an opportunity, and in due course their comments and criticisms were received. Subsequently you sent me, with your approval, a report by a special railroad committee which, after study, had reached conclusions adverse to the recommendations in Mr. Little's reports.

Mr. Little, with the help of other members of my staff and of bureaus of the Interstate Commerce Commission, has gone very thoroughly into the criticisms of his reports which were submitted by the elevator lessees and the railroad committee.

I now submit to you Mr. Little's supplemental report, which presents the results of the further studies made after receipt of the criticisms of his original reports. The conclusions, which I endorse, remain unchanged, except that it is pointed out that the Federal Trade Commission is now engaged in an investigation of grain marketing practices with special reference to the grain warehousing problem, and that its forthcoming report may be expected to deal comprehensively with these matters. The comprehensive treatment of the entire grain marketing situation which that report will contain may point the way to some modification of Mr. Little's recommendations.

This grain elevator situation is a typical product of railroad competition, when left to its own devices. It is a survival of the old rebating days. The elevators have been leased on inadequate terms to large concerns with a view to attracting or holding grain traffic to the lines of the owning railroads. If this practice were confined to a single railroad, or to a few out of many, it might be of competitive benefit; but when it becomes a general practice, it also becomes a general burden, without benefit to any railroad. Moreover, the privileges thus granted to the lessee operators of the elevators create an unwholesome situation in the grain markets which works to the disadvantage of the grain producers, as Mr. Little clearly shows in his reports. Rebates and like special railroad privileges always benefit the strong at the expense of the weak.

If the railroads concerned are able to co-operate with each other in a sound collective undertaking, they have an opportunity here to clean up a situation which is now burdensome to them, in a manner which will cut their expenses and add to their revenues and at the same time correct unwholesome and unhealthy grain-market conditions to the material advantage of the grain producers. Whether or not I shall, in the capacity of Federal Co-ordinator of Transportation, be able to follow this matter up is uncertain. However, it is a matter peculiarly within the provinces and purposes of the Association of American Railroads, and which that association ought to be able to remedy.

In view of the evidence contained in Mr. Little's reports, indicating that present practices with respect to these railroad-owned grain elevators result in violations of Sections 2, 3, and 6 of the interstate commerce act, and probably of the Elkins act as well, I shall also bring these reports to the attention of the Interstate Commerce Commission. In this connection, it may be well to point out, what perhaps is not as clearly stated in these reports as it should be, that the evidence does not indicate that the unfavorable financial results of the leases to the owning railroads have been confined to the depression period. They were equally manifest in the prior period of prosperity.

Publicize Success of New Trains

Burlington and Milwaukee get over to the public the news that their innovations have passed the experimental stage

TWO unusual publicity undertakings featured the celebration of the completion of a million miles of service by the "Zephyr" trains of the Chicago, Burlington & Quincy on May 27, and the birthday anniversary of the "Hiawatha," of the Chicago, Milwaukee, St. Paul & Pacific, on May 29. The Burlington celebration was staged at Savanna, Ill., where one of the Twin Zephyrs operating between Chicago and the Twin Cities completed the millionth mile, and at Chicago, where the Chicago Association of Commerce featured this achievement at a luncheon. As the train approached Savanna the thousand persons attending the luncheon at Chicago listened to addresses by H. L. Hamilton, president of the Electro-Motive Corporation; Edward G. Budd, president of the Edward G. Budd Manufacturing Company; Ralph Budd, president of the Burlington; and Charles F. Kettering, president of the General Motors Research Corporation. The addresses of Messrs. Ralph Budd and Kettering were broadcast over station WGN. At Savanna a large hoop covered with paper was placed on the tracks for the train to run through as it completed the millionth service mile. An announcer at Savanna described the approach of the train, and the noise it made while passing through the hoop and setting off torpedoes was transmitted over the radio. This part of the broadcast was transmitted to those at the luncheon in Chicago through loud speakers. The luncheon program was climaxed by a picture taken previously which showed the train passing through the hoop.

The Hiawatha, which completed a year of service on May 29, and which has carried nearly a quarter million revenue passengers in this period, celebrated its anniversary by a program that included an Indian ceremonial staged in the Union Station at Chicago and in Minneapolis just prior to the departure of the train. At Chicago a band of 15 Indians from Gitchee Gumee, clad in full tribal regalia, paddled their war canoe up the Chicago river to Adams Street. To the beat of drums Chief Bold Bear of the Mohawks (Hiawatha's tribe) assisted by Day Break, chief of the Winnebagos (from the Wisconsin Dells), led his squaws and warriors to the Union Station train shed, built a ceremonial fire and sent two of his braves to the Hiawatha's locomotive to notify the engineman that his accomplishments had been recognized and that he was to be made a member of the tribe. Tribal rites were then performed.

Inducting the Hiawatha's Engineman Into the Mohawk Tribe

One of the Twin Zephyrs Ran the Millionth Diesel Service Mile Near Savanna, Ill.

Mr. Kettering, in his address before the Chicago Association of Commerce, said in part: "There has been a lot of criticism of the railroads, but there is one thing the critics have forgotten, or perhaps never remembered, and that is that the railroads are not manufacturing organizations. They are operating organizations, and I believe they have done as excellently with their equipment as any other organization could have done.

"A great deal of discussion has been brought up about their not having a research and development organization. I think they have done as splendid research and development work in their particular line as anybody else. So, in bringing in this new type of motive power, we are bringing to them another thing—a new type of equipment.

"The presenting of this new type of equipment is a projection. It is new and as with anything new, there come with it a lot of things that made you wonder why

they ever got in there—but, there is something about a new thing that people don't always recognize, and that is that for some reason they expect the first one to be better than the last one of the old. That is a very difficult thing to do.

"Somebody has to have faith. Somebody has to be able to analyze the big difficulties that come along in the projection of any new operation. Those difficulties which are so apparent can be eliminated. There is something normal about the human mind which makes it always ready to point out difficulties, but there are very few people who ask 'Can these difficulties be overcome?'

"The Millionth Mile has a great deal of significance. It represents a lot of hard work. It represents a lot of discussion, a lot of aspirin tablets and a lot of discouragement—but if out of that can be picked the essential features that are good, and those which are not good can be eliminated, then we have gone very much farther than a million statute miles, because in traveling these miles, there are so many more things involved than simply the movement of the train.

"It doesn't seem, by good engineering analysis, that it would be possible to make a Diesel train quite as cheaply as you can make the other type. Of course, when we started in the automobile business, the cars were quite expensive. I am sure that if Mr. Budd will order these Diesel trains in the same quantities that we make Chevrolets, we can reduce the price considerably. But I want him to know that the Electro-Motive Corporation and our reseach organization are putting the same intense effort into the study of this problem as we would if it were quantity production. We know that, as we go along, we will find what we need to know, and we will be able to reach precision."

Ralph Budd Describes Trends in Transportation

Ralph Budd spoke in part as follows: "We are celebrating the first million miles that any railway has made with Diesel powered passenger trains in actual service. The important thing is not that million miles which represent only a day's work for the railways of the country; it is whether other millions of similar miles will be made more quickly and how much more quickly. This first million required 563 days, an average of about 1,775 miles a day. But the last half of the million was run in about 190 days. At first, 500 miles a day was the total. With the inauguration of the Denver service the four Burlington Zephyrs will be making 3,842 miles daily, and by the end of the year the eight Zephyrs will total about 6,000 miles a day, or at the rate of over two million miles a year.

"With the other somewhat similar trains which have been built or are being built by other railways, it appears that there will be twenty streamline Diesel trains in operation by the end of 1936, and they will make perhaps 5,000,000 or 6,000,000 miles a year in the aggregate. Of the twenty, all but five or six will be operating out of Chicago—to Omaha, Lincoln, St. Joseph, Denver, Minneapolis, St. Paul, St. Louis, Kansas City and the Pacific Coast.

"The first Zephyr was, to a large extent, an experiment with the travel habits of the people, in an effort to find out whether, with the maximum of comfort and speed and low fares, a substantial part of the lost passenger business could be won back by the railways. This experiment was highly successful but it cannot be said with certainty whether people prefer one type of high speed train or another, speed and rates of fare being equal. The trend, however, unmistakably favors faster trains.

"Considerable time must elapse before we will know with accuracy wherein the economics lie, as between paying a somewhat higher price for the ultimate in strength and light weight, or a lesser price for cars that weigh less than conventional equipment but are heavier than Zephyrs. The tendency is definitely away from excessively heavy cars.

"Remarkable as the performance of the first Zephyr has been, the later Diesels have been more nearly perfect, and the latest, the 'Mark Twain,' has the distinction of performing its 442 mile schedule every day since its inauguration last October."

Hamilton Talks on Diesel Manufacture

Mr. Hamilton spoke in part as follows:

"There is no question that a 'back to the rails' movement is on, and that railways are merchandising their service in the full meaning of that term. It is gratifying to know that the public is responding. When the term 'New Era in Railroading' is used, it has a clear ring, and the benefits that are to accrue will not be confined to railroads and allied industries as all our people are bound to feel the effect of such a strong stimulant.

"I would like to say the decision to build a new plant for the manufacture of Diesel railway motive power was not a sudden inspiration, or as some may think, just a 'venture.' Every phase of the undertaking was projected with the same care that the product itself is engineered. I have in my file a complete wind-directional and velocity record for the vicinity of the plant at La Grange. That may sound odd but it had a bearing on the shape of the property and the setting of the plant. You may be sure we did not launch this undertaking without first evaluating the importance of our railway system in the economic and social structure of America. We were also convinced of the capacity of railroad managements to meet their problems if given a little encouragement, and things are now happening daily that justify this decision. The public acceptance and response to the new services offered by the railways has inspired the managements to still greater efforts. That is why we feel this to be the dawn of a new era in American railway history."

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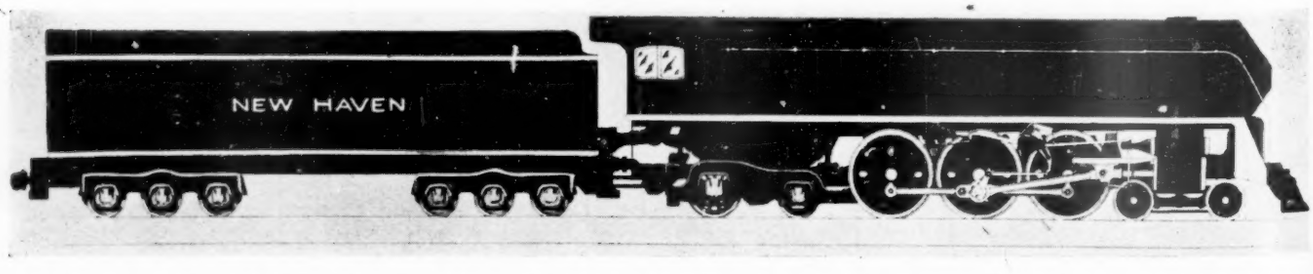


Artists Drawing of One of the Ten Streamlined Locomotives of the 4-6-4 Type Recently Ordered by the New York, New Haven & Hartford from The Baldwin Locomotive Works

Pool L.c.l., Eastman Again Adjures

Report of his own conclusions approves report of Section of Transportation Service, says some compulsion is necessary

WASHINGTON, D. C.

ASSERTING that the railroads, while recognizing the importance of the problems involved in the handling of merchandise traffic, in two years have done little to remedy the situation, and that he is forced to the conclusion that if progress is to be made some form of compulsion is necessary, either by the Association of American Railroads or by the government, Co-ordinator Eastman on May 29 released a report of his own conclusions approving, virtually in its entirety, the Merchandise Traffic Report of his Section of Transportation Service which was published on March 17, 1934.

This report, recommending some form of pooling of merchandise traffic, has since been the subject of extensive conferences and two railroad reports on the same subject. Mr. Eastman said that whether or not he would be able to follow the matter up as federal co-ordinator of transportation remained to be seen but that in any event he hoped that the necessary collective action on the part of the railroads may be taken at the instance either of the Regional Co-ordinating Committees or of the association. His report makes public for the first time the replies of the railroad committees to the original report.

He confirms the finding that the railroads have been losing merchandise traffic steadily, largely because other transportation agencies have taken advantage of the slowness, inconvenience and excessive cost of railroad merchandise service. He concludes that what is left of railroad merchandise traffic is being handled at a loss, due to wasteful duplication of services, facilities and routes.

The co-ordinator approves the proposal to pool railroad less-than-carload freight, express and forwarder traffic into one, two, three or four railroad-owned merchandise agencies, each national in scope, which would co-ordinate train and truck service to give efficient, fast, complete, door-to-door transportation for merchandise on a basis of rates much simplified but properly related to costs.

He refers to a "general agreement" that the present railroad method of handling merchandise is wasteful and ineffective in the face of keen competition, and that some form of pooling is the only solution. The co-ordinator states that he was acquiescent to the railroad request for a chance to resort initially to voluntary local or regional pooling, but he finds that this policy has been ineffective, nearly two years having elapsed with no sign of such voluntary action.

In his letter to the regional committees he said:

Mr. Eastman's Letter

"In transmitting this report, I assumed responsibility for its statement of facts, knowing that they had been checked and rechecked in every possible way, but I did not then endorse the recommendations that certain radical changes be made in the methods of transporting merchandise, for I wished to have an opportunity to consider your views as to these recommendations before arriving at a definite opinion.

"Since that time I have received and considered two reports by special committees of railroad officers appointed to study this matter. They did not approve the recommendations of my Section of Transportation Service, for although they conceded the existence of conditions urgently requiring correction, they felt that the application of needed remedies should be left to the individual railroads. Notwithstanding that I did not find these reports convincing, I thought that the individual railroads should have an opportunity to show what they could do in the way of correction, and that the results would probably be instructive.

"Now that an ample opportunity of this character has been afforded, the time has come for me to submit to you a final report on the matter, expressing definite conclusions in the light of all information gained since my original communication of March 22, 1934. Such a final report is transmitted herewith, and it speaks for itself.

"Let me in this connection quote an expression from my communication of March 22, 1934:

> Permit me to emphasize, however, the thought that the correction of these conditions requires collective action on the part of the railroads. I am thoroughly persuaded that they cannot be corrected without introduction of the principle of pooling. This merchandise traffic cannot be successfully handled on an individual railroad basis. The essence of any solution of the problem must be concentration and simplification, as opposed to diffusion and complexity, and there is no way to attain these ends other than to handle the traffic collectively on a basis which probably must be nation-wide. A further essential, I believe, is co-ordination of the different forms of transport, and the use of each in its proper economic sphere. Merchandise traffic cannot be handled as it should be handled by the railroads alone or by the trucks alone. Both methods of transport must be employed and linked together in proper co-ordination.

"What has since transpired has convinced me, even more strongly, of the essential soundness of these views. Permit me to say, also, that my study of the subject has by no means been confined, since the date of my original communication, to a review of the reports received from the special railroad committees. John C. Emery, who since last summer has been co-director of my Section of Transportation Service, has spent a large amount of time in interviewing the officers of individual railroads and endeavoring to promote the voluntary action on their part which was the end and aim professed by the special committees. He has kept me constantly in touch with the situation, and is in entire agreement with the report now submitted."

The report summarizes the original report of the section, the report of a special committee of railroad officers on it, and another report, called the Special Report, which was unanimously approved by the Regional Co-ordinating Committees, following with a statement of Mr. Eastman's conclusions. The parts dealing with the Special Report and Mr. Eastman's conclusions are as follows:

Special Report

The Special Report, which was unanimously approved by the Regional Co-ordinating Committees, reflected substantial agreement between the Special Committee of Railroad Officers and

my Section of Transportation Service, as to principles, objectives, and largely as to methods. The principle of co-ordination was approved, as were the common use of facilities and terminal services for all classes of merchandise traffic; improvement of service in speed, dependability and regularity; simplified rate structure, classification and packing requirements; simplified billing and accounting methods; realization of all practical economies in the handling of merchandise; the molding of rates, service, plant and facilities to meet the needs of the shipping public; collection and delivery service, to be included in the rate, with certain exceptions; and concentration and distribution of merchandise at a minimum number of stations.

The one point of continued difference between the Special Committee and my Section of Transportation Service lay in the method of procedure. The Section proposed immediate merchandise pooling by all railroads. The Special Committee proposed to leave the establishment of merchandise pools to the carriers themselves, acting individually or in groups, regionally or otherwise, with pooling accomplished either directly, or through the Railway Express Agency, or by the organization of an l.c.l. freight traffic agency.

The full text of the Special Report follows:

Having considered the Merchandise Traffic Report of the Co-ordinator's Section of Transportation Service, the final report of the joint National Committee appointed by the Railroad Regional Co-ordinating Committees, and subsequent suggestions, and in the hope of harmonizing divergent views, we;

1. Conclude that until there is essential regulation of the rates and charges of transportation competitive with rail, no plan for pooling rail merchandise traffic will restore the lost L.C.L. traffic to the rails to the degree desired, upon a compensatory basis.

2. Approve in principle the greatest practicable co-ordination in the handling of L.C.L. merchandise traffic and recommend that the rail carriers co-operate to the maximum in the development of the most practicable, efficient and expeditious plan to accomplish the desired results. Such co-operation should contemplate the accomplishment of the following:

(a) To the extent that it may be practicable and in the common interest to do so, eliminate the duplication of organizations, services and facilities, and where lightly loaded merchandise cars now move over several routes between common points consolidate the traffic into a minimum number of cars, and divide the revenue and expenses upon an agreed basis.

(b) To the extent practicable and economical provide for the common use of facilities and terminal services for all classes of merchandise traffic, however handled.

(c) Continue to improve the service to the public with respect to speed, dependability and regularity, using equipment adaptable to the service, at speeds and on schedules to meet present-day needs.

(d) Simplify the merchandise rate structure, classifications and packing requirements.

(e) Simplify billing and accounting methods.

(f) Realize all practical economies in the handling of merchandise traffic.

(g) Increase the volume of merchandise traffic carried by rail by molding the rates, service, plant, and facilities to meet in the maximum degree needs and convenience of the shipping public.

(h) Establish collection and delivery service to be included in the rate, subject to such exceptions as varying conditions may render expedient.

(i) Where it would make for the rapid and economical movement of merchandise between carrier's premises and patron's place of business, the collection and delivery service established should be so organized as to provide for the concentration and distribution of merchandise at the fewest possible number of freight stations. In metropolitan areas this should also minimize the necessity for freight and depot storage space necessary under existing practices.

It is proposed that these purposes shall be accomplished by the carriers themselves, acting individually or in groups, regionally or otherwise. Pooling of merchandise traffic, where advantageous to the carriers and the public, should be undertaken by any two or more carriers either (a) directly or (b) through utilizing the services of the Railway Express Agency or (c) by organizing an L.C.L. freight traffic agency, as the carriers in each case may determine to be preferable.

In the organization and management of such L.C.L. freight traffic agencies, the following principles should govern:

1. Any rail carrier should have the privilege of joining or participating in some one agency operating in its territory.

2. The rights, duties, obligations, management, policies and division of revenues and expenses shall be agreed upon between the agency and its member-carriers.

3. Where L.C.L. freight traffic agencies are created, each such agency should:

(a) Issue uniform tariffs covering classifications, packing requirements, and rates for all merchandise freight.

(b) Use, to the extent economical and practicable, the existing merchandise facilities and forces of its member-lines for handling L.C.L. merchandise freight, in order to avoid duplication of facilities, personnel, or service.

(c) Use, to the extent economical and practicable, the Accounting, Treasury, Law, Tariff, or other General Office forces of its member-lines to avoid duplication.

(d) Make such arrangements as may be agreed upon between said agency and its member-lines for the transportation and handling of its merchandise traffic.

The L.C.L. Freight Traffic Agencies, the Railway Express Agency to the extent that it handles L.C.L. freight traffic, and each Railroad which may continue to handle L.C.L. freight independently of any such Agency, shall jointly and severally establish and maintain such interchange arrangements as may be necessary to afford prompt and satisfactory service to the public.

Conclusions

The fact which impresses me is that my Section of Transportation Service and the Committees of railroad officers are so close to substantial agreement. There is such agreement with respect to the elements of the merchandise traffic problem, to the urgent need of a remedy, and to the general character of the remedy which will solve the problem. Estimates of economies possible are not agreed upon, but even if the lowest estimates are accepted, these are worth getting. Personally I am convinced that the economies will be much larger than the railroad committees have been ready to admit.

There is disagreement only as to the extent to which the remedy should be initially applied, and perhaps as to how far it should eventually go. My Section of Transportation Service is convinced that pools practically nationwide in scope are indispensable to the full accomplishment of the agreed objectives. The railroad committees, on the other hand, insist upon a more cautious course, leaving individual carriers free to resort initially to local or regional pooling of merchandise, or even to do nothing at all.

The Section Report gives reasons for an immediate and thorough-going attack on the problem. It seems to me that the railroad committees tacitly admit the validity and force of these reasons, but refuse to admit their compelling nature because of two fears: fear of "nationalization" of the railroads, and fear of jeopardy to the interests of individual railroads.

Pooling Less Dangerous Than Waste If Nationalization Is to Be Avoided

I am unable to follow the reasoning which ends in the fear of "nationalization." An important part of the merchandise traffic of the many individual railroads has long since been pooled, or "nationalized." That is the express traffic, which is handled for the railroads by the express agencies in much the fashion now proposed for handling of all merchandise traffic. The pool of the Railway Express Agency, Inc., is virtually nationwide. If the working of this express pool has offered grounds for criticism, it has not been a ground that a dangerous precedent in "nationalization" has thus been set. The express pools were formed to solve a special problem in transportation. That is likewise the reason for the proposal of the nationwide merchandise pools, for merchandise transportation is now fully as specialized in the difficulties it presents as express traffic ever has been. Apprehension of the effect of the plan for national

merchandise pooling, on the ground that it involves a grave national policy, is without real basis.

So far as "nationalization" of the railroads is concerned, I am of the opinion that this is much more likely to result from a continuance of the waste and losses which are sought to be corrected than from the corrective measures proposed.

There is more substance in the fear of jeopardy to the interests of individual railroads which might result from a redistribution of the merchandise traffic. The possibility is admitted, but there is no reason apparent to me why the possibility should become an actuality. Properly drawn pooling contracts would definitely avert any such danger.

I am of the opinion, too, that the individual as well as the collective interests of the railroads will be better served by a plan which gives every promise of introducing efficiency and profit in railroad merchandise transportation, than by the present plan which has been demonstrated to result in inefficiency and loss.

For the foregoing reasons, it is my conclusion that the expressed fears with respect to the effect of national merchandise pooling are without foundation. There remain to be considered the merits of the alternative proposal, made by the railroad committees; namely, to leave the individual carriers free to resort initially to local or regional pooling of merchandise, or to do nothing at all.

Admittedly, such local or regional pools would eliminate some of the waste which attends the present method of merchandise transportation. Furthermore, a gradual approach to national merchandise pooling might be better in the long run than the immediate adoption of the latter, if the gradual approach were made by railroads eager to make each pool succeed and the immediate national pooling scheme had to be put in effect by railroads unconvinced of its merits and dubious of its effect. It is for this reason that I have been acquiescent in the expressed desire of the railroad committees to try out their own plan of procedure and have refrained from forcing the broader and, in my opinion, better conceived plan of my Section of Transportation Service.

Unfortunately, this policy has not borne much fruit. It is now approaching two years since agreement was reached on the necessity for action, but the action was left to the initiative of the individual railroads. This seems enough time at least for a start to have been made, yet the merchandise problem today is largely exactly what it was two years ago. Regulation of interstate operations of motor carriers has become a fact. Store-door collection and delivery has been widely introduced. Individual railroads have purchased truck lines and arranged some co-ordination of rail and highway transportation. But of joint railroad action to get at the root of the merchandise problem, which is the multiplicity of services, facilities and routes, there has been nothing. Even the storedoor collection and delivery, which might be considered a substantial step toward a better system of merchandise transportation, has been independently established, without the other changes in operation, service, and rates which should have gone with it, so that the net effect has apparently been to make railroad merchandise operations more expensive, in opposition to the essential need.

Subsequent to the negotiations in which my Section of Transportation Service was involved, various committees of railroad officers, at the direction of the Regional Co-ordinating Committees, attempted to develop plans for regional merchandise pools. Although I have not been officially apprised of the results of their work, I understand that before this effort was dropped, some progress had been made in developing concrete measures to carry into effect the regional pooling principle.

In a word, there is every indication that the plan advanced by my Section of Transportation Service for solving the merchandise traffic problem has the general approval of railroad officers, in local or regional if not in national form. This being the case, it is impossible for me to understand or excuse the failure of the railroads to take voluntary action in line with the principles which they have approved. The conclusion is forced upon me that if progress is to be made, some form of compulsion is necessary, either by the Association of American Railroads or by the government.

For present purposes, it is enough that I should approve or disapprove the Merchandise Traffic Report of my Section of Transportation Service. It has already been made clear that I approve it in general. Two points, however, deserve special mention.

The Section Report proposes the formation of two merchandise agencies. In my judgment, however, it is not a matter of overwhelming concern whether there should be one, two or even three or four merchandise agencies. The important thing is that there should be such agencies, immediately, in one of these numbers.

The other point is as to the classification and system of rates proposed. The principles of a "classification of exceptions" and rates based on cost plus a profit seem to me to be sound, compelled by competitive conditions, and attainable only by drastic revision of the classification and the actual rates now in effect. The classification and system of rates suggested in the Section Report represent merely one suggestion. I am not committed to them, but on present evidence I do approve the principle involved.

I should add that so far as there may be findings in the Section Report which bear directly upon issues which will be considered by the Interstate Commerce Commission in the investigation which it has instituted of collection and delivery service in eastern territory, they are subject, so far as I am concerned, to any changes which the record in that proceeding may show to be warranted. I refer particularly in this connection to the finding that collection and delivery service should not be attended by allowances or other "optional" features.

With the exceptions noted, I approve and make a part of my Conclusions on Merchandise Traffic the Merchandise Traffic Report of my Section of Transportation Service, including its text and its appendix of 16 exhibits.

Air Conditioning Research Now Well Underway

IT is estimated that the air conditioning of railroad cars has cost about $40,000,000 since 1932; and to conserve this expenditure as well as to increase the effectiveness of future expenditures, the Association of American Railroads authorized an extensive air conditioning study, as announced in the *Railway Age* of December 28, 1935. This study, made under the direction of L. W. Wallace, director of equipment research, is now well under way and a comprehensive progress report is promised by November, at which time air conditioning programs for 1937 will be under consideration. The thoroughness and care with which all of the details of the investigation have been developed is strikingly evidenced by a recently prepared air conditioning research manual outlining the purposes, program and schedules of the study.

The principal objectives of the investigation, as summarized in the manual, are: (1) to determine the basic practices and policies which should be adopted with respect to air conditioning railroad passenger cars; and (2) to determine what system or systems are most suitable for railway service as measured in terms of (a) capital investment, (b) cost of maintenance and operation, and (c) satisfaction and well being of passengers.

Involved in such determinations are design, performance and cost problems. To obtain basic and reliable information relating to these matters, two types of investigations are necessary; namely, road and laboratory. The work has been so planned that the results of the road and laboratory work supplement each other, thereby making it possible to secure an objective picture of existing conditions and what may be done to improve them.

It is essential that factual information be secured with reference to many aspects of the air conditioning sys-

tems now being used by the railroads. These may be classified under three headings, namely: (A) Mechanical, design and performance; (B) investment, operating and maintenance costs; and (C) results obtained as regards temperature, humidity, distribution, quality, cleanliness of air, and odors.

In order to obtain the necessary information covered by (A) and (C), the following specific data is to be secured:

(1) Method of controlling temperature and humidity in cold and warm weather and with what results. This eventually will involve establishing a standard temperature and relative humidity relationship for various sections of the country and a temperature differential with respect to outside conditions.

(2) The type of air filters used and the results being obtained; the directions in which improvements may be made so as to secure more satisfactory results.

(3) The amount of power being used per unit of work done (which is power per ton of refrigeration).

(4) Means used in securing diffusion of air within the cars that are materially different from common practice.

(5) The difficulties, if any, in installing, operating and repairing the power plant for air conditioning.

(6) The facilities for servicing equipment in the yards.

(7) The experience had with odors and what means have been adopted to lessen this problem and with what success.

(8) Difficulties experienced in making inspections and repairs.

(9) Time required to inspect, repair and replace the the various units of the several air conditioning systems.

(10) Determine actual results being obtained in air conditioned cars with respect to temperature, humidity, cleanliness, odors, air movement and distribution of air.

There has been assembled a "kit" consisting of the necessary instruments and devices for obtaining a record relating to all of the above named factors.

Work Already in Progress

Through the courtesy of the Baltimore & Ohio, facilities have been made available at the Mt. Clare shops, Baltimore, Maryland, for making laboratory tests of each type of air conditioning being used on railroad passenger cars. Through the generous and interested co-operation of the manufacturers, their respective equipment is being sent to Baltimore for test. The test work began there March 15. To date, five systems have been thoroughly tested. This phase of the work will be completed in July. The equipment is being tested in accordance with the standard method of rating and testing air-conditioning equipment, as prepared by the Joint Committee on Rating Commercial Refrigerating Equipment from the American Society of Refrigerating Engineers and the American Society of Heating and Ventilating Engineers.

The object of these tests is to compare the performance of each system as a whole and also that of each major element of the several systems: compressors, condensers and evaporators. The amount of power required per unit of cooling effect produced will be determined also. It is recognized that the amount of power consumed in the operation of an air conditioning system is of great importance. Therefore, the character and efficiency of the type of drive or prime mover is to receive careful study. For this purpose a special program for the testing of the several types of drives used is to be conducted at Ohio State University. This program will start early in June. By correlating the data secured in the tests of the compressor, condenser and evaporator at Baltimore, the relationships between the cooling effect produced and the power delivered into the system will be determined.

The Pullman-Standard Car Manufacturing Company has provided facilities at Pullman for the testing of four cars at one time. Some thirty cars are to be tested. The test program comprehends hot-room tests of air conditioned cars conducted for the purpose of determining the cooling load required when all factors of loading are present, as in road service, except those caused by solar radiation and wind effect. A second objective is the determination of the effectiveness of the insulation of the car. Further objectives (not previously stated) are a study of the air and temperature distribution within the car; the determination of the amounts of fresh and recirculated air supplied for various settings of the fresh-air damper; and the determination of the comparative temperatures occurring within the car when heated and humidified as it would be when occupied to full capacity.

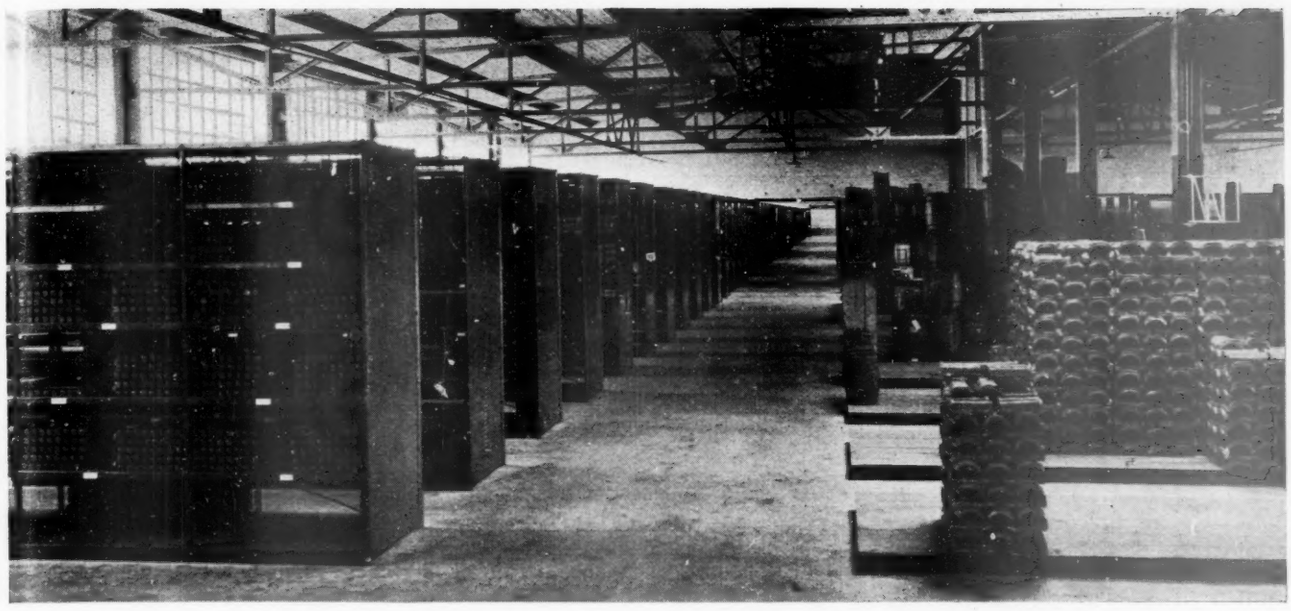
These tests are scheduled for the months of June and part of July. The following types of cars, as operated by various railroads and equipped with each type of air conditioning system tested at Baltimore, will be tested at Pullman: coach, lounge, diner, combination, sleeper and cafe. The results of these tests will supplement those obtained at Baltimore. Tests have been completed on four cars. These cars are being obtained through the co-operation of the several railroads.

Air Conditioning Costs

The air conditioning of railroad passenger cars has cost the railroad industry approximately $40,000,000 since 1932. The additional expenditure for this purpose will be very large. The cost of operation and maintenance also total a large sum per year. Therefore, those responsible for the study have very wisely proceeded to obtain accurate data as to the amount invested and the cost of maintenance and repairs. The Department of Finance, Accounting, Taxation and Valuation and the Mechanical Division have aided the Division of Equipment Research in developing the necessary procedure for obtaining the desired information. The department, with the co-operation of a number of railroads, has collected a large body of data. These data are now being analyzed by the department.

Every important phase of the air conditioning of passenger cars is covered in the program of tests which the Division of Equipment Research has developed only after extensive conferences with railroad officers, manufacturers and technical groups. As a consequence, the test results promise to be comprehensive and generally beneficial both to railroads and to manufacturers of air-conditioning equipment. It is felt that, with these test results available, railroads can proceed with their air-conditioning programs with much more assurance as to costs and as to the conditions actually obtained in passenger cars.

AMONG THE FACILITIES on the "Queen Mary," new Cunard-White Star liner which arrived in New York on its maiden trip on June 1, is a joint railway travel agency and information bureau sponsored by the four British main line railways, the Great Southern of Ireland and the Travel Association of Great Britain and Northern Ireland. Through this agency passengers on the "Queen Mary" will be able to make all their shore travel arrangements, including purchase of railway tickets and reservation of hotel accommodations. In addition, the staff of the bureau will exhibit motion pictures of resort areas in the British Isles.



In the General Store of the Wabash Where Bills for Materials Issued are Made from Prices on the Bins

Bin Pricing in Wabash Stores Survives Depression

Preferred to office pricing after 12 years trial in all stores and with all materials—Fewer mistakes claimed

By W. F. Brown
Chief Clerk, General Stores, Wabash, Decatur, Ill.

BIN pricing is a subject which will bring about lively discussion any time that store department men come together. Many arguments are advanced for and against the practice. Since it was started on the Wabash about twelve years ago, it has developed into an efficient, practical system which has met all pricing requirements, and at the same time has proved to be an aid to good accounting.

The Wabash Plan

On the Wabash, all invoices and store orders are passed to the price bureau, where they are sorted to separate the papers for special material from those for stock material. The papers are then passed to a comptometer operator where unit prices are developed. The unit prices are then ready to be entered in a master price book by a price clerk. If the price is substantially the same as the old one, no entry is made. If the new price is out of line with the previous one, the computations are verified, thus providing a double check. As new prices are posted, a small slip of paper, showing the number of the item of material and the price, is inserted in the margin of each price book page where a change occurs. A stenographer then types bin labels from the price books, using the slips of paper as a guide in locating the price changes. The date is stamped on the back of the labels. The new bin labels are then delivered by messenger to the proper section stockmen.

The bin labels used for inside material are printed on perforated sheets of light cardboard which can be inserted in a typewriter. Each label is 1⅜ in. wide and 2¾ in. long, which permits 24 labels to a sheet. These labels fit into the label strips on both steel and wood cases. Each label shows the stock book item number, description, price, price unit and weight.

The new labels received by section stockmen are placed on the bins and the old labels destroyed. As material is issued, the given price and unit are marked on the requisition by the section stockmen, or helpers, and the requisitions are then sent to the office for handling. The price is thus applied directly to the requisition from the bin label instead of from a price book.

Pricing for material stored outside presents a different problem. The paper tag alone is not suitable because of weather conditions, and a cellophane envelope is under trial at present with the idea that the paper label may be encased in the envelope and then inserted in the holder. Good results have been obtained with this method, especially at roundhouse stores, in keeping the tags from becoming soiled and illegible; but the ability of the envelopes to withstand moisture remains to be proved.

Meanwhile prices for outside material are issued to stockmen on a mimeographed form. The price books

are marked to indicate to the price clerk whether the price change should be issued on the bin tag or mimeographed form. As changes are received by the stockman, the price, together with proper description, is stenciled on a metal tag made from scrap car roofing. Where material is stored in outside bins, the metal labels are fastened directly over the material. Where material is stored on outside platforms, a triangular block 12 in. long with a 4½ in. face is used, to which the metal tags are attached. The purpose of the triangular block is to obtain the correct angle so that a person standing can easily read the label. For material, such as frogs, switch points, etc., stored on rail bearings, a metal tag 4 in. by 10 in. is suspended from the bearings by means of a wire. Bulky items of special material, such as pumps, motors, etc., have the price and description stenciled on the material itself.

Lumber Pricing

Lumber pricing gives rise to certain problems which have led to a somewhat different practice. When bin pricing was first inaugurated on the Wabash, each shipment of lumber was separated and the lumber in each shipment was issued at the actual invoice price. Triangular metal labels were provided with one corner bent at right angles and this corner was driven into the bottom board of each shipment. A white line was painted along the edge of the top board of each shipment; and as other shipments of the same size were received and piled on top of the first, the process was repeated. In this manner the exact price was used for all lumber, as a different price was automatically placed in effect when the pile was used below any white line.

This method of pricing lumber was discontinued some time ago, not because of its impracticability, but solely as an economy measure. Constant attention was required to keep the tags in place and the identification lines painted. During the depression, when forces were curtailed to a minimum, it became increasingly difficult to devote sufficient time to such work. Therefore, a system of average prices for lumber is now being used. These prices are developed once each year for different kinds of lumber, such as car lining, decking, siding, etc. They are issued to the stockman and are displayed on the piles.

Selection of Pricing Units

Experience has shown that most clerical errors have been the direct result of mistaken price units. More satisfactory results are obtained by using a price unit which is the same as that by which the material is usually requisitioned. If the price of a material figures $1.98 a hundred, it is issued at $0.02 each. Similarly, if the price figures $2.02 a hundred, it is issued at $0.02 each. In other words, the price is raised or lowered to the next even cent. Following are examples of some of the common items of stock material on which a price unit is used to correspond with the requisition order unit: Bar iron, by the foot instead of cwt.; lumber, by the piece instead of M.F.B.M.; glass, by the piece instead of the box; bolts, by the piece instead of the hundred; and fuses, by the piece instead of the gross.

It has been found desirable in some cases to provide two price units to accommodate different types of issue. For instance, when nuts are issued on shop requisitions, a few at a time, a price for each is used. Where the issue is in keg lots, a price per hundredweight is used. Good judgment must be exercised, however, as there are some items of material which cannot be treated in this manner without distorting the accounts. For example, the price of one piece is considerably less than one cent and cannot be satisfactorily raised to show one cent per unit. Some of the more common items of this nature are: Nails, cotters, paper drinking cups, copper wire, line wire, etc. Consider an issue of 100,000 lin. ft. of line wire, the actual invoice price of which is $1.29 a 100-ft. If this wire were issued at $0.01 a foot, there would be a loss of $290. Therefore, it will be readily understood that this feature must receive careful consideration.

Pricing at Smaller Stores

The foregoing discussion has dealt primarily with pricing methods at the general storehouse. However, the bin pricing system has also fitted the outlying stores conveniently and the same pricing methods are used at such locations. When store requisitions are filled, the stockman, or helper, applies the price and unit, the same as on other requisitions. A carbon copy of this requisition is mailed to the storekeeper at the outlying point as a shipping notice the same day that material is shipped. This shipping notice provides the local storekeeper with the latest prices and from these he prepares price labels or revises old labels. When material is issued from that store, the storekeeper in charge shows the price and unit on the requisition, securing the information direct from the price tag. He then mails the requisitions direct to the accounting office.

One of the strongest arguments against bin pricing is that stockmen and their helpers are not sufficiently capable of handling the clerical work involved in pricing requisitions. Those who advance this argument, however, trust these same men to handle stock books and stock records, which is one of the most important functions of the store department.

It is also a well-known fact that a great many requisitions, especially shop requisitions, do not carry sufficiently accurate information to enable the price clerk to apply correct prices. This causes no small amount of difficulty and encourages guesswork to a great extent. In order to overcome this, most railroads have been obliged to depend on their stockmen to supply the needed information; and in many cases, have gone so far as to institute a system which requires the stockmen to show a stockbook item reference. If the stockmen are sufficiently capable of taking care of this class of work, it is logical to believe that they could go a step further and actually price the requisitions from the bin tags as material is issued. It is just as possible for a stockman to apply the wrong item number on a requisition as it is to show an incorrect price.

No Extra Labor Required

Another argument against the bin pricing system is that it requires additional clerical labor in order to keep prices on the bins up to date at all times. The method used on the Wabash seems to refute this argument. At the general storehouse at Decatur, Ill., it has been found that price changes average about 50 a day. This requires about one hour of a comptometer operator's time to develop the prices, about one hour for the price clerk to post them in the master price book, and about 45 minutes of a stenographer's time to type the labels. The time required by the stockman to place the new labels is small, and this may be done by a laborer if desired. With this method, prices are always up to date and the work of the stockman is not interrupted in any way.

Bin pricing results in more accurate accounting, in that it eliminates almost entirely the possibility of memory pricing and guesswork. When the requisitions are priced directly from the bin labels at the time material is issued, it is almost certain that prices will be correct.

In addition to this, the work is being done by men who handle the material every day and are thoroughly familiar with it. The latter in itself is a sound argument in favor of the bin pricing system, as we know that price clerks working in an office, however efficient they may be, cannot know material as well as the stockman who is actually handling it.

It has been claimed by some that stockmen and their helpers are apt to resort to pricing by memory by not always having a convenient place to write in the price on requisitions. However, a stockman seldom must walk more than a few steps to reach a flat surface, such as a wall, the end of a material rack or the top of a keg or a box. If all of these possibilities should fail, it would be a simple matter to provide the men with pocket pads.

From a company standpoint, there is an advantage in having the stockmen and those working in the storeroom know the value of the materials they are handling. If they are educated along these lines and are taught to familiarize themselves in a general way with the enormous amounts invested in material and supplies, it is natural to assume that most of them will exercise more care in handling the material. We are also safe in stating that a system which displays the value of material is beneficial to officers and supervisors of departments using material, as they are constantly in touch with the storeroom and can familiarize themselves with the costs of material and supplies. This should have its corresponding effect on the curtailment of operating expenses.

It has been found on the Wabash that the bin pricing system has been the means of accelerating the pricing of issue documents, making it possible to pass charges to the using departments daily, and within a day or two after material has been issued. This is an important feature to officers of other departments operating on an appropriation, as it enables them to keep in touch with the situation at all times. It also furthers the spirit of service, which is one of the primary functions of the store department, and is an aid to producing closer co-operation between departments.

An Aid to Inventorying

Bin pricing has also been the means of considerable saving in pricing inventory sheets. On the Wabash, inventory sheets are pre-written and pre-priced. This operation formerly resulted in overtime when performed by price clerks, as it assumed such proportions that it was found impossible to handle it during regular working hours along with other current work. With the inauguration of the bin pricing method, the work is divided among several stockmen and the prices are inserted when sheets are pre-written, in advance of the calling of units. This rarely results in penalty overtime.

If all of the pricing work now being done by the various stockmen, storekeepers and others on the Wabash were performed by office forces, an increase in clerical force would be necessary to take care of the volume of work. This is proof that the method has resulted in an actual saving in dollars and cents. The system is justified to a greater degree, however, by the increased efficiency in pricing and accounting.

It is significant that throughout the business depression, when many changes on the Wabash were found advisable as economy measures, the bin pricing system has remained substantially the same as when it was established. No major changes have been necessary, except that involving lumber pricing, and the system has been sufficiently flexible and efficient to meet any operating or business condition.

R.F.C. Chairman Explains M. & St. L. Plan

WASHINGTON, D. C.

JESSE H. JONES, chairman of the Reconstruction Finance Corporation, testified on May 28 before the sub-committee of the Senate committee on interstate commerce which has been holding hearings on the plan for the partition of the Minneapolis & St. Louis among its connecting lines with the aid of a loan from the R. F. C., which has been severely criticized both by members of the committee and by witnesses before it. The hearings have been held for the purpose of a report to the full committee on a resolution proposed by Senator Benson, of Minnesota, providing for an investigation by a special Senate committee in place of that being made by the Interstate Commerce Commission.

Mr. Jones testified the plan had been devised as the only feasible one offered after those interested in reorganizing the company had failed for 12 years to formulate any satisfactory plan. At the same time he read to the sub-committee, headed by Senator Shipstead, of Minnesota, letters describing as ridiculous a charge which had been made at a previous hearing by J. F. McElwee, of Peoria, Ill., that J. W. Barriger, chief examiner of the railroad division of the R. F. C., had told him that the plan for a sale of the property to the Associated Railways had been devised in an effort to prevent a loan to facilitate reorganization and to protect the interests of F. H. Prince. Mr. Jones himself and the letters declared that, on the contrary, Mr. Prince would not benefit in the slightest from the plan. He also said that in all discussions of the plan he had insisted that communities served by portions of the road to be abandoned should be provided with highway service and that the employees should be protected. After Mr. Jones had testified Senator Shipstead announced that a new plan of reorganization had been submitted by a group of bondholders headed by Philip J. Roosevelt, of New York.

Mr. Jones told of the applications made by the receiver of the road to the R. F. C. for loans which it had declined on the ground that no good purpose would be served unless the property could be reorganized on a basis so that it could pay its fixed charges. Later, in 1934, it offered to a bondholders' committee headed by F. J. Lisman to make a loan of $4,750,000 to aid such a reorganization, but other creditor committees protested and "it occurred to some of us," he said, "that it might be desirable to endeavor to work out a solution for the M. & St. L. in connection with some other system occupying the same general territory." With that thought in mind he had addressed a letter to the executives of eight roads in the territory suggesting that some of the connecting carriers might agree upon a plan of purchase at a foreclosure sale with a view to each system taking such part of the M. & St. L. as it might be able to use. This led to the development of the plan now under discussion, to be financed by a loan of $7,200,000 subject to the approval of the Interstate Commerce Commission and the R. F. C. Mr. Jones pointed out that from 1919 to 1935 the road had averaged $183,000 net operating income a year, which he said "does not present a very promising outlook for profitable operation of this road as an independent system."

He added that the first application by the receiver was denied prior to Mr. Barriger's connection with the R. F. C. and that it was on his own recommendation that

the corporation offered in 1934 to give favorable consideration to a loan for reorganization purposes, but said that the more information he got about it the more he became convinced that some other solution than a reorganization as an independent system was desirable.

"In all events," he said, "the future of the Minneapolis & St. Louis under existing law is a matter for the court and the I. C. C. to determine. We have no power except to co-operate."

Mr. Jones also read a letter from Mr. Lisman to Clarence A. Miller, counsel for the sub-committee, saying that Mr. Barriger had co-operated with him toward his purpose of reorganizing the road in the interest of security holders and that the statement that the suggested loan to the Associated Railways was to be helpful to Mr. Prince was "absurd on its face" because it would give very little to any of the bondholders and nothing to the refunding and extension mortgage in which he thought Mr. Prince had the largest interest.

He also read a letter from Philip J. Roosevelt, who had criticized the plan now under consideration, but who said he felt "pretty sure" that the McElwee testimony was "nonsense." There was also a letter from Mr. Barriger to Senator Shipstead saying he had made no such statements as Mr. McElwee had attributed to him, that "his statement regarding my working for the personal interests of Mr. Prince is manifestly ridiculous" because under the plan Mr. Prince's holdings would be substantially wiped out, and that Mr. Prince has reason to oppose the plan if any security holder has.

Mr. Jones also said it was his understanding that "Mr. Prince would be entirely out of the picture and would get nothing." He said he did not know just who suggested the present plan but thought it was in the public interest. Asked by Senator Shipstead if he thought many other roads ought to be dismembered and consolidated, he replied that "we have more railroad mileage than we can support without some kind of subsidy." He said he would be glad to co-operate with any practical plan under which the road could be reorganized and earn its fixed charges but that he doubted its ability to survive as an independent system.

Mr. Jones presented a telegram from Ralph Budd, president of the Chicago, Burlington & Quincy, saying that the Associated Railways and the roads interested in the plan to purchase the property of the M. & St. L. had authorized him to say that if, after study of the applicability of the recent dismissal wage agreement to the purchase of railroad property at foreclosure sale and the extent from a financial standpoint of the additional liability to be assumed as a result of such application, it is concluded to proceed with the pending plan as so modified, and the Interstate Commerce Commission approves the plan, the dismissal wage agreement will be applied to M. & St. L. employees affected by the carrying out of the plan. Senator Benson said it had been testified that 2,800 men would be displaced by the plan, but Mr. Jones said he saw no reason why anyone should be thrown out of employment and that the corporation would not co-operate in any plan that did not provide for the employees.

Further hearings were postponed after Mr. Jones' testimony, in view of the prospects for early adjournment of Congress and of the new plan submitted by Mr. Roosevelt. This contemplates a loan of $5,000,000 to be made by the R. F. C. and a loan of $1,000,000 to be made by Mr. Prince, who would also acquire the stock to be issued by a new company, the Minneapolis & St. Louis Railroad. Mr. Roosevelt, in a letter to Mr. Jones, asked if he did not agree that in view of the improved conditions since the present plan was adopted it might be wise to re-examine the plan and see whether conditions have not so changed as to render it in the public interest that the road be reorganized as a unit. To the letter was attached an endorsement of the plan by Mr. Prince. Mr. Roosevelt said that all of the security holders junior in lien to the receivers' certificates, the preferred claims, and the Albert Lea bonds, had agreed upon formulas and ratios in which they will accept new securities under a plan of reorganization.

Chairman Jones on June 3 replied to Mr. Roosevelt's letter describing the new plan as "a delusion in that it holds out false hopes to everyone interested in the road." He said in part:

"Our analysis of the plan follows:

(a) It gives control of the road for 99 years to an operating company with no capital except the $1,000,000 it proposes to borrow at 4½ per cent, interest on which will be a first charge on any profits the road may earn after actual operating expenses.

(b) The operating company will have no responsibility except to operate the road as best suits the purposes of those in charge of it for this very long period, making the road a pawn, subject to abuses and manipulations that should not be tolerated.

It is fair to say in this respect that we do not question the motives of Mr. Prince or those who may be associated with him in lending the $1,000,000 to the operating company, but 99 years is a long time, and our memories need not run very far back to illustrate my point.

(c) The device of giving the R. F. C. a first mortgage on the railroad, and Mr. Prince a first lien on the income of the road for interest on his loan of $1,000,000 to the operating company, makes the first mortgage in effect a second mortgage.

(d) The $1,000,000 loan to the operating company, underwritten by Mr. Prince, not only gets 4½ per cent interest as a first charge on the road's earnings ahead of the first mortgage held by the R. F. C., but it also gets a bonus of $1,000,000 4½ per cent income bonds of the railroad company, and all of the capital stock of the operating company, a rather heavy toll for a loan of $1,000,000.

The R. F. C. could hardly be expected to look with favor on making a loan in cooperation with any plan embodying the principles you propose. It makes entirely too easy practices employed all too often with respect to some of our railroads in times past."

A.A.R. to Spend $1,300,000 For National Advertising

A NATIONAL joint advertising campaign involving the expenditure of approximately $1,300,000, will be launched by the Association of American Railroads in June. The principal campaign will be conducted in national magazines, including 6 weeklies, 12 monthlies, 10 national and sectional farm papers and 14 labor publications. It will be supplemented by newspaper advertising by individual roads and by the regional organizations. In the western territory the Western Association of Railway Executives will spend $250,000 for joint newspaper advertising, while the railroads in the East and South will increase their individual advertising appropriations to provide for additional newspaper space. The eastern roads have already published

some joint newspaper advertisements on the new reduced passenger fares.

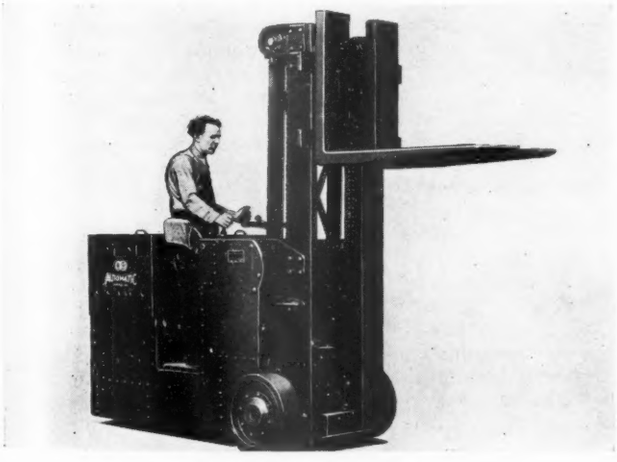
The purpose of the campaign is manifold, it being designed to increase freight and passenger traffic, to secure relief from the rising tide of regulatory legislation, to inhibit restrictive legislation forcing prohibitive labor costs, to compete for business on an equal basis with other carriers, to enable operation on a basis yielding a reasonable return on capital invested, and to lay the ghost of government ownership.

A plan prepared by Arthur Kudner, Inc., advertising agency of New York, which is handling the campaign, suggests an association organization for advertising and public relations activities, an annual railroad "show" supplemented by a traveling show, a "voice of the passenger" department which would solicit suggestions for improving service, a national magazine "En Route" which would be sold to the public for 25 cents and which would encourage travel, a speakers' bureau from which clubs and other organizations could secure speakers, the preparation of factual printed matter about the railroads for use in schools and colleges, motion pictures of railroad scenes and activities for showings at clubs and other organizations, radio broadcasting from a special train and the operation of de luxe through train services from coast to coast. The general plan was confirmed at a member meeting of the Association of American Railroads at Chicago on May 28, following action by the board of directors and the executive committee, but some of the details have not yet been announced.

The last joint national advertising campaign of the railroads was undertaken by the Association of Railway Executives in 1920, following the return of the railroads from federal control.

Build New Fork Truck

THE Automatic Transportation Company, Chicago, has designed a new, heavy duty tiering fork truck of 10,000 lb. capacity which will handle loads 72 in. long and will operate in 94-in. intersecting aisles. A center control is said to give the truck an unusually short



Heavy Duty Tiering Truck

turning radius for a fork truck of this capacity. The truck has a front wheel drive to obtain the maximum traction on ramps or slippery floors, and the operator is fully protected and still has a clear vision of all operations. Loads can be moved quickly and stacked three or four bundles high with this truck.

Communications . . .

Protecting Trains from Automobiles

OMAHA, NEBRASKA

TO THE EDITOR:

For twenty years I have been associated with the Physicians Casualty Association of America, which is an insurance organization covering physicians, surgeons and dentists against loss of income due to accident. In our files are several instances of claims where an automobile had been driven into the side of a train. Perhaps due to the fact that I have been in the insurance business, I have attempted to use as much discretion as possible when I am motoring. Notwithstanding that fact, I had a narrow escape recently from driving into a freight train which I had difficulty in seeing until I was within a few feet from the track.

I do not have the actual facts at hand but I do know that a material portion of the automobile-train accidents are due not to the train striking the automobile but rather to the automobile being driven into the train, especially at night. It occurred to me that it might be practical to attach to the side of a freight car two reflectors, one near the front and one near the rear. The lights of the oncoming automobile would be reflected in a manner similar to the various road-warning signs on the highway. Passenger trains are usually lighted either in the Pullmans, coaches or baggage cars, rendering them easily visible.

The above suggestion may have little merit but I thought it could do no harm to at least offer it. I am very much interested in railroads and maintain quite an extensive scale model system in my home, the consist of each train being exactly the same as is seen on the big railroads except the size.

LORING ELLIOTT.

Advocates Compulsory Arbitration

NEW ENGLAND

TO THE EDITOR:

"Labor," published in Washington, D. C., contains a statement by D. B. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen on the elimination of firemen-helpers on diesel-electric locomotives. I happen to have some stock in two of the roads mentioned by Robertson as having paid their stockholders substantial dividends and know that these roads, the Maine Central and the New Haven, have not paid dividends for years. The impression he is giving in his propaganda shows he is not discussing the question with any honesty or fairness.

The question at issue in this controversy is one that the firemen should not sctle, led on by unprincipled labor agitators. The controversy should be settled by an impartial board. Of course, where safety requires, two men should be employed in the cab of the diesels. Where two men are not needed for safety it is unjust to the stockholders, who have lost most of what they have invested, to make the railroads hire unnecessary employees.

I would urge you, in the interest of railroad investors, to advocate that Congress enact a law requiring compulsory arbitration of wage and labor disputes between railroads and employees before the Interstate Commerce Commission.

I am well aware that there are many objections, but it seems to offer some hope of better conditions for the unfortunate stockholders, who now lose every time, no matter how unreasonable the demands of the employees. For years you must have noticed that the railroad executives are always beaten when they deal with the brotherhood chiefs. What do you think of a wage schedule that requires a railroad to pay the engineer of a diesel two days' pay for a round trip, the actual running time of which is between four and five hours?

It is only fair to the investors that a reasonable arrangement of pay should be substituted for such a schedule.

STOCKHOLDER.

NEWS

Four-Months Railway Net a 2.18 Per Cent Return

$146,112,621 compares with $121,075,241 or 1.81 per cent, in same period of last year

Class I railroads for the first four months of 1936 had a net railway operating income of $146,112,621, which was at the annual rate of return of 2.18 per cent on their property investment, according to reports filed by the carriers with the Bureau of Railway Economics of the Association of American Railroads. In the first four months of 1935 their net railway operating income was $121,075,241 or 1.81 per cent on their property investment.

CLASS I RAILROADS—UNITED STATES

	1936	1935	Per Cent of Increase
Month of April			
Total operating revenues	$313,409,628	$274,663,066	14.1
Total operating expenses	235,072,729	209,415,791	12.3
Taxes	25,751,082	20,389,840	26.3
Net railway operating income	41,547,644	34,708,718	19.7
Operating ratio—per cent	75.00	76.24	...
Rate of return on property investment—per cent	2.44	2.03	...
Four Months Ended April 30			
Total operating revenues	$1,221,270,856	$1,074,680,303	13.6
Total operating expenses	939,336,262	834,135,279	12.6
Taxes	94,398,547	80,104,823	17.8
Net railway operating income	146,112,621	121,075,241	20.7
Operating ratio—per cent	76.91	77.62	...
Rate of return on property investment—per cent	2.18	1.81	...

Operating revenues for the four months totaled $1,221,270,856, compared with $1,074,680,303 for the same period in 1935, an increase of 13.6 per cent. Operating expenses amounted to $939,336,262, compared with $834,135,279 for the same period in 1935, an increase of 12.6 per cent.

Class I railroads in the first four months of 1936 paid $94,398,547 in taxes compared with $80,104,823 in the same period in 1935, or an increase of 17.8 per cent. For the month of April alone, the tax bill amounted to $25,751,082, an increase of $5,361,242 or 26.3 per cent above the same month in 1935.

Twenty-nine Class I railroads failed to earn expenses and taxes in the first four months of 1936, of which 9 were in the Eastern district, 5 in the Southern and 15 in the Western district.

Class I railroads for April had a net railway operating income of $41,547,644, at the rate of 2.44 per cent. In April, 1935, their net was $34,708,718, or 2.03 per cent. Operating revenues for April amounted to $313,409,628, compared with $274,663,066 in April, 1935, an increase of 14.1 per cent. Operating expenses totaled $235,072,729, compared with $209,415,791 in the same month of 1935, or an increase of 12.3 per cent.

Class I railroads in the Eastern district for the four months had a net of $101,145,025, at the rate of 3.05 per cent. For the same period in 1935, their net was $90,709,963, or 2.74 per cent. Operating revenues of railroads in the Eastern district for four months totaled $632,601,942, an increase of 12.2 per cent, compared with 1935, while operating expenses totaled $465,281,730, an increase of 12.3 per cent. Class I railroads in the Eastern district for April had a net of $29,835,317, compared with $22,047,019, in April, 1935.

Class I railroads in the Southern district for four months had a net of $22,671,577, at the rate of 2.04 per cent. For the same period in 1935, their net amounted to $17,960,787, at the rate of 1.60 per cent. Operating revenues in the Southern district for four months amounted to $161,910,901, an increase of 12.9 per cent compared with the same period in 1935, while operating expenses totaled $122,916,626, an increase of 10.1 per cent. Class I railroads in the Southern district for April had a net of $5,504,658, compared with $5,444,426 in April 1935.

Class I railroads in the Western district for four months had a net of $22,296,019, at the rate of .99 per cent. For the same four months in 1935, they had a net of $12,404,491, at the rate of .55 per cent. Operating revenues in the Western district for four months amounted to $426,758,013, an increase of 16.2 per cent above the same period in 1935, while operating expenses totaled $351,137,906, an increase of 13.9 per cent. For April the railroads in the Western district reported a net of $6,207,669, compared with $7,217,273 for the same roads in April, 1935.

New York Law Requires "Helper" on Diesel Engines

Governor Lehman of New York has signed the bill passed at the recent legislative session, which amends the New York State railroad law, so as to require a two-man crew on "fuel-electric" engines (Diesel).

Congress Ending Without Much Railway Legislation

As adjournment approaches it is apparent that most proposals will go by the board

With the date for the adjournment of Congress still uncertain, although efforts were still being made to bring about an adjournment by June 6 or June 8, it was apparent early this week that most of the proposed legislation of interest to the railroads which has been considered during the seventy-fourth Congress and on which hearings had been held would go by the board.

The latest proposal, for the continuation of the office of federal co-ordinator of transportation for a new term of three years, without the restrictions against reduction in railroad employment which have largely nullified the purpose of the emergency railroad transportation act of 1933 for the past three years, was still in the stage of a resolution introduced by Senator Wheeler on which no plans for a hearing had been announced and which had not yet been considered by the committee on interstate commerce of which he is chairman. An executive session of the committee to consider the resolution had been called for May 29 but was not held. The resolution was being opposed by both railroads and railroad labor organizations.

The Pettengill bill to repeal the long-and-short-haul clause of section 4 of the interstate commerce act was apparently dropped on May 28 when hearings on it before the Senate committee on interstate commerce were adjourned subject to the call of the chairman. Some 35 witnesses who had appeared in opposition to it had not yet been heard but after nearly three weeks of hearings the opponents of the bill calculated that it had been delayed sufficiently so that there was no further danger of its being called up at this session. Senator Wheeler, who was often the only Senator present at the hearings, had made every effort to prolong them, while none of the members of the committee who had been counted on as being in favor of it appeared willing to make much of a fight. The bill had been passed by the House but if not acted upon by the Senate at this session would have to be taken up again as a new bill. Representative Pettengill announced that he would reintroduce it at the next session.

The Senate on June 1 passed the bill recommended by Co-ordinator Eastman and the Interstate Commerce Commission

(*Continued on page 929*)

Eastern Roads Inaugurate Reduced Passenger Rates

B. & O. is encouraged by the initial response—Others reluctant to appraise situation as yet

The reduced passenger fares ordered by the Interstate Commerce Commission became effective on Eastern railroads on Monday of this week, June 1. All of the principal roads except the Long Island are applying the prescribed rates—two cents per mile in coaches and three cents in Pullmans without surcharge—to both interstate and intrastate business. The Long Island was this week charging three cents per mile for intrastate tickets.

While passenger traffic officers of most of the roads are yet without definite traffic and revenue figures reflecting the public's initial response, the Baltimore & Ohio, which favored the fare cuts and refused to join the court test of their validity, reported that it was "greatly encouraged" with the results of the first two days under the new fares. Officers of other roads, calling attention to the fact that this week's figures were influenced by returning holiday travelers, are generally reluctant as yet to attempt an appraisal of the initial response. All roads are, however, advertising the fares extensively, announcements of individual lines having supplanted the joint advertising of last week.

The Baltimore & Ohio reported that on Monday it sold at New York more tickets and took in more revenue than on June 1 of last year. This was announced by H. E. Simpson, general eastern passenger agent, who called attention to the fact that last year June 1 was on a Saturday, a heavy week-end travel day. Mr. Simpson also reported a great increase in the number of inquiries and telephone calls regarding fares.

The New York Central, comparing last Monday with Monday, June 3, 1935, reported a small increase in business at Toledo, Ohio, and Cleveland, and slight increases at Buffalo, N. Y., and New York.

Increased activity for information bureaus was experienced on many roads. At Pennsylvania station, for example, Monday's telephone calls were 50 per cent in excess of those for the previous Monday, and 22 additional employees were assigned to handle the rush. The Pennsylvania made no statement on the traffic and revenue results, preferring to wait until the new fares are in effect for a couple of weeks at least. This road did report, however, that Monday's business out of New York required it to operate no extra trains or cars. Passenger traffic officers of the New York, New Haven & Hartford and other roads were similarly reluctant to appraise the situation until the fares have had a further trial.

The New York Public Service Commission has scheduled for Friday of this week a hearing on the Long Island's intrastate tariff publishing the three-cents-per-mile rates. Also an early decision was expected in the suit brought by the Transit Commission (having jurisdiction in New York City) in the New York Supreme Court to require the Long Island to apply the two-cent rate within New York City. The Long Island has encountered some one-man demonstrations against the three-cent rate, one passenger in particular having refused to pay more than the two-cent fare on two or three occasions. In each instance the conductor refused to accept the reduced payment which the passenger claims to have then left on the car seat.

Meanwhile, in the United States District Court for the Southern District of New York, the Interstate Commerce Commission on May 29 filed its appearance as intervening defendant as well as an answer to the petition of 23 Eastern roads for an injunction to enjoin the commission from enforcing the reduced-fare orders. The answer, praying that the petition be dismissed, contends that the petitioners were "accorded the full hearing provided for in and by the Interstate Commerce Act." It denies the contention of the carriers that the commission's orders of April 18 and May 19 "are affirmative in effect." These orders, the former of which refused the postponement sought by all Eastern roads other than the B. & O. and the latter which denied the Long Island's plea for a three-cent rate, the answer says, "are negative in character and relate only to procedure before the commission over which this court does not have, and therefore cannot exercise jurisdiction."

"The commission," the answer continues, "further alleges that the findings and conclusions in said report of February 28, 1936, were and are, and that each of them was and is, fully supported and justified by the evidence submitted in said proceeding, as aforesaid.

"The commission further alleges that in making said report it considered and weighed carefully, in the light of its own knowledge and experience, each fact, circumstance and condition called to its attention on behalf of the parties to said proceeding by their respective counsel, including matters covered by the allegations of the petitions herein.

"Further the commission denies that petitioners will suffer either irreparable damage or irreparable loss, if the orders, including said order of February 28, 1936, are not annulled and set aside by the court."

Additional Roads Exempted from Passenger Fare Order

The Interstate Commerce Commission has issued a second supplemental report in the passenger fare case exempting a number of additional roads from the passenger fare basis prescribed in its general order, which became effective this week. The Magma Arizona is allowed to continue to charge fares approximating 6 cents a mile; the California Western Railroad & Navigation Company 5 cents a mile; the Tonopah & Goldfield 3 cents a mile; the Rio Grande Southern 5 cents a mile; the San Luis Valley Southern 4.5 cents a mile; the Tennessee & North Carolina 3 cents a mile; the Colorado & Southern on its narrow-gage lines 2⅝ to 4 cents a mile; and the Norfolk Southern 2½ cents a mile on its Virginia Beach division.

Canadian Roads Dispute Right to Build New Line

Controversy in Quebec legislature over C. P. R. effort to construct branch into mineral area

Parliament at Ottawa continues to talk about further joint savings by the Canadian Pacific and Canadian National while the two railways continue their controversy before the Legislature of Quebec province over the effort of the C.P.R. to get a charter from that Legislature to build a branch line into the rich mineral area of northern Quebec which is already served by the Canadian National. In a prominent Montreal newspaper last week there appeared in the same issue an account on the front page of the controversy at Quebec City over the branch line while on an inside page there appeared a large-sized advertisement published jointly by the two railways making another bid for freight on the basis of their collection and delivery service.

The Canadian Pacific declares it wants the branch line to open up rich agricultural territory in northern Quebec but it has been stated in reply that the rich farming areas consist of "rocks and Christmas trees." What has made the fight a lively one is that the C.N.R. already has one line running into the Rouyn country and the Temiskaming & Northern Ontario, owned by the Ontario government, has a line tapping this area from the west. These two roads are virtually charging that the C.P.R. is not keen about serving a farm area or developing new traffic but simply attempting to fence off about 20,000 square miles of rich mineral area for Consolidated Smelters, a subsidiary of the C.P.R.

There have been two or three engagements in the controversy before the Railway Committee of the Quebec Legislature and another will be staged this week when a final effort will be made to secure approval of the project. Indications are that most of the legislators are prepared to give the C.P.R. part of what it wants, but that they may balk at assigning any valuable mineral areas to the road. At the last meeting of the committee by a substantial majority it voted to let the C.P.R. build only from Angliers to Rouyn.

President S. J. Hungerford of the Canadian National in a statement to the committee said in part:

"After giving careful consideration to the situation and notwithstanding the necessity for keeping expenditures on the government owned system to a minimum, the management of the Canadian National has reached the conclusion that the time has arrived for the immediate building of this line between Senneterre and Rouyn and has brought its views to the attention of the Dominion government.

"The development of the territory has now reached a stage where it becomes attractive to private railway interests, and if the invasion by such interests is permitted, the people of Canada will be deprived of the benefits for which they have already paid in capital cost and operating deficits. Instead of reaping the reward of

a development project, boldly conceived, the people of Canada will have to recognize the National Transcontinental Railway as a permanent drag upon the finances of the country if this invasion is allowed. We hope, therefore, to make an early start on the building of this branch line from the National Transcontinental Railway."

Additional Funds Authorized for Florida Canal

After having twice voted against the project, the Senate on May 30 adopted an amendment to the relief appropriation bill authorizing the President to allot $10,000,000 for additional work on the Florida ship canal if a favorable report is made by a special board of engineers which he is to appoint. The board is to report by July 20. The vote in favor of this proposal was 35 to 30. Work on the canal project, which had never been specifically authorized by Congress, had been started by a special allotment made by the President from work-relief funds and $5,400,000 has now been expended. The total cost has been estimated at some $150,000,000 but various engineering reports on the project are still being reviewed by the Army engineers.

Shippers' Advisory Boards

The following shippers' regional advisory boards will meet during June: Southwest on June 9, at Fort Worth, Tex.; Trans-Missouri-Kansas on June 17, at Wichita, Kan.; Allegheny on June 17, at Pittsburgh, Pa.; Pacific Northwest on June 18-19, at Yakima, Wash.; Central West on June 22-23, at Pocatello, Idaho; and Pacific Coast on June 25-26, at San Francisco, Calif. At the Southwest Shippers' Advisory Board meeting the Fort Worth Lions' Club, the Fort Worth Traffic Club, the Fort Worth Chamber of Commerce and the Fort Worth Freight Bureau will sponsor a luncheon at which Samuel O. Dunn, chairman of the Simmons-Boardman Publishing Company and editor of the *Railway Age*, will be the guest speaker. Officers of the board for the ensuing year will be elected.

Argue C. N. R. Bill Before Parliamentary Committee

Considerable heat was developed in the meeting of the special House of Commons committee on railways in Ottawa last week over a proposal that the present three trustees of the Canadian National be called upon to give an account of their stewardship of the property. The pending bill, which is supported by the government and which occasioned the discussion, would abolish the trustees and substitute a directorate in their stead.

Judge Fullerton, chairman of the trustees, appeared before the committee. Replying to a charge made by the Minister of Railways (Hon. C. D. Howe) that the trustees had failed to make any improvement in the railway situation, he declared this charge untrue. This statement brought lively objection from the Liberal members of the committee. After much controversy, the meeting finally ended with a statement by the trustee of their willingness to submit to the committee written memoranda regarding their conduct of the railways' affairs.

Three Streamliners Go Into Service in June

Three streamlined trains, the Streamliner-City of San Francisco and the two trains comprising the Streamliner-City of Denver, will be placed in service by the Union Pacific on June 14 and 18, respectively. The Streamliner-City of San Francisco will be placed in service between San Francisco and Chicago on a 39¾-hr. schedule over the Southern Pacific, the Union Pacific and the Chicago & North Western. The first trip will be eastbound, leaving San Francisco at 3:45 p.m. and arriving in Chicago at 8:30 a.m. the second morning. The first westbound trip will be from Chicago on June 17, leaving Chicago at 6:15 p.m. (the same time as the Streamliner-City of Portland and the Streamliner-City of Los Angeles), arriving in San Francisco at 8 a.m. Five round trips will be made each month. Departure from San Francisco will be on the 2nd, 8th, 14th, 20th and 26th of each month, and from Chicago on the 5th, 11th, 17th, 23rd and 29th of each month.

The Streamlier-City of Denver will begin daily service on June 18 between Chicago and Denver on a schedule of 16 hrs. for the 1,048 miles or at an average of 65.5 miles per hour. This train will be the fastest in the world for distances of 800 miles or more. Each day one unit will leave Chicago at 6:20 p.m. and will arrive in Denver at 9:20 a.m., while the second unit will leave Denver at 4:20 p.m. and arrive in Chicago at 9:20 a.m.

The first unit of the Streamliner-City of Denver will be exhibited in Chicago on June 6, 7 and 7, and, after a period of test runs and exhibitions in Colorado, will be placed in service from Denver. The second unit will be delivered on June 12 in time to begin operation from Chicago. Inaugural ceremonies will be held at Chicago and Denver.

Fourth Section Application by Water Lines Denied

An application filed by two steamship lines for relief from the long-and-short-haul provisions of the fourth section of the interstate commerce act was denied by Division 2 of the Interstate Commerce Commission in a report dated May 25 and made public this week. The Merchants and Miners Transportation Company and the Norfolk & Washington Steamboat Company had asked for authority to establish and maintain proportional ocean rates on classes and commodities between Boston, Mass., and Providence, R. I., on the one hand and Baltimore, Md., Washington, D. C., and Alexandria, Norfolk and Newport News, Va., on the other without observing the long-and-short-haul rule. The proposed rates are the same as the present local all-water port-to-port rates and came under the commission's jurisdiction because they were to be used in connection with rail and truck rates to and from Boston and Providence in constructing through rates. It was proposed to make the first-class rates 10 cents less than the all-rail rates prescribed in the eastern class rate revision between the same points. Under the proposed adjustment departures would result at Norfolk and Newport News because, while the water hauls from Boston and Providence to these points are included within those to Baltimore, Washington and Alexandria, the proposed rates are higher because of their relation to the all-rail rates. By rail Norfolk and Newport News are farther from New England. The commission said the evidence submitted did not establish that the relief sought is necessary or would result in any increased traffic over applicants' routes.

Continuation of Co-Ordinator's Office Uncertain

Prospects for a continuation of the office of federal co-ordinator of transportation beyond June 16, the expiration date of the emergency railroad transportation act of 1933, were in an uncertain state during the early part of this week. Senator Wheeler's resolution to continue the office, with the broad but somewhat vague powers to do almost anything to further the purpose of the act but without the restrictions against reduction in employment contained in Section 7, had not yet been acted upon by the committee on interstate commerce, although it had held two meetings since the resolution was introduced, and representatives of the railroads and the railroad labor organizations were working in opposition to it. At the same time there were few indications of any active support for the resolution. A similar resolution was introduced in the House by Representative Russell, of Massachusetts, but it had not been considered by the House committee.

Efforts were being made by Senator Wheeler to work out some sort of compromise plan, such as a continuation of the office of co-ordinator without power to issue orders but with the duty of continuing the investigatory work which has been carried on and possibly with the idea of prodding the railroads into greater activity along the lines already recommended. It is understood, however, that this would also be opposed both by the railroads and the labor organizations. President Roosevelt at two press conferences has expressed the opinion that the unfinished work of the office should be carried on to completion and said he had spoken about it to the chairmen of the two congressional committees but there have been no indications that he has exerted any pressure.

I. C. C. to Investigate Present Pick-Up and Delivery Service

The Interstate Commerce Commission on June 1 ordered an investigation of the pick-up and delivery service now being operated by the Pennsylvania, Erie, Boston & Maine and other carriers in official territory, as well as of that performed at the borders of official territory in connection with shipments from and to points in official territory, and has assigned it for hearing at Washington on June 16 in connection with the hearing already announced on the pick-up and delivery tariffs which the commission had suspended just prior to April 1 and May 25. The roads mentioned now have in effect pick-up and

delivery service for freight where the hauls are 260 miles and less, with graded additional charges where the hauls are for greater distances. The tariffs of other eastern roads providing for a similar plan which were to have become effective on April 1 were suspended on protests by the trucking interests and a modified plan which was to have become effective on May 25 was later suspended. As a result complaints have arisen of discrimination at border points because the commission had allowed the western and southern roads to make their tariffs effective earlier in the year.

Freight Claim Meeting

More than 250 representatives of the railroads attended the forty-fifth annual session of the Freight Claim division of the Association of American Railroads, held at Chicago on June 2-4. Judge R. V. Fletcher, vice-president and general counsel of the Association, and H. G. Taylor, chairman of the Western Association of Railway Executives, were the principal speakers. Officers elected for the ensuing years are: Chairman, W. C. Johnson, freight claim agent of the Chicago & North Western; first vice-chairman, J. B. Mordecai, traffic manager of the Richmond, Fredericksburg & Potomac and second vice-chairman, S. R. Biering, assistant general claim agent of the Gulf, Colorado & Santa Fe.

P. & S. Division Sets Convention Date

The annual meeting of the Purchases and Stores Division of the Association of American Railroads will be held in the Palmer House, Chicago, on Thursday and Friday, July 9 and 10.

Program for New York Railroad Club Outing

The program for the New York Railroad Club's annual outing and golf tournament to be held on Thursday, June 18, at the Westchester Country Club, Rye, N. Y., lists the usual schedule of golf and field events and midway entertainment.

Among the golf events will be the regular annual tournament open to members and guests. The player scoring low net in this will be awarded the Brady Cup and in addition other prizes will be awarded for low gross and low net in each of three handicap classes; also a guest prize. Custody for one year of the Herbert H. Vreeland Trophy will be awarded to the railroad or railroad supply company team winning the seventh annual golf championship. Other prizes will be awarded for field events.

The committees in charge of the outing are headed by C. E. Smith, president of the club, on whose staff are R. P. Townsend, general chairman; R. D. Jenks, assistant general chairman in charge of golf; John E. Leonard, assistant general chairman in charge of games; and A. E. McGuire, assistant to general chairman. D. W. Pye is chairman of the general committee which has two vice-chairmen—A. N. Dugan and C. A. Gill. Other committees together with their respective chairmen are: Attendance, H. N. Norris; reception, Frank Hedley; golf, A. E. Calkins; publicity, James G. Lyne; out-of-town, Samuel F. Pryor; transportation, C. G. Melvin; dinner, G. H. Ord; skee ball, H. J. Dempsey; games, H. B. Nilsen; baby doll, H. V. McKedy; putting, R. F. Hayes; ping pong, D. B. Mugan; cards, H. N. Ransom; swimming, J. R. C. Hintz; horseshoes, R. E. King; tennis, J. F. Walker.

Former Governor Alfred E. Smith of New York, who is a regular attendant at these outings, is listed as chairman of the goodfellowship committee of which H. H. Vreeland and W. G. Besler are vice-chairmen.

Member and guest tickets for the outing, including green fees, games and dinner, are respectively $5 and $7; for games and dinner alone, the member tickets are $3 and the guest tickets $4. The New York, New Haven & Hartford is offering for the outing a round-trip rate from New York of 75 cents.

Congress Ending Without Much Railway Legislation

(*Continued from page 926*)

S. 1636, to amend the interstate commerce act to give the commission power to require establishment of through routes and joint rates without regard to the provision in the present law which protects carriers against being "short-hauled." The bill was intended to meet a decision of the Supreme Court of the United States in 1929 which had held invalid an order of the commission prescribing additional through routes. The bill was supported by the National Industrial Traffic League and the American Short Line Railroad Association but was opposed by the Association of American Railroads. The bill also writes into the permanent law a provision now in the emergency transportation act of 1933 that the elimination of any existing route or joint rate, fare, or charge, or classification without the consent of all carriers parties thereto, or authorized by the commission, shall be deemed prima facie unreasonable and contrary to the public interest.

An amendment proposed by Senator Hastings was adopted providing that "in fixing through rates and in determining what is desirable or necessary in the public interest, the commission shall not take into consideration the necessity or desirability of diverting revenues from one railroad to another."

The only other railroad bill to which much attention was paid during this session of Congress was the Wheeler-Crosser bill, which was dropped as soon as the agreement between the railroads and the labor organizations on a plan of dismissal compensation was signed. There was no action on the full-crew, train limit, or six-hour day bills proposed by the railroad labor organizations but the Senate committee on June 2 ordered a favorable report on four of the bills on the program of the railroad labor organizations on which hearings had been held before a sub-committee. These are the hours of service bill and the bills to set up new organizations in the Interstate Commerce Commission to inspect and supervise train dispatching, maintenance of track and bridges, and signal systems.

The bills recommended by Co-ordinator Eastman providing for regulation of water carriers and for a reorganization of the Interstate Commerce Commission were not taken up at this session.

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings, and places of meetings:

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 3400, Empire State Bldg., New York, N. Y. Annual meeting, September 15-16, 1936, Hotel Sherman, Chicago, Ill.

ALLIED RAILWAY SUPPLY ASSOCIATION.—F. W. Venton, Crane Company, 836 S. Michigan Ave., Chicago, Ill. To meet with Air Brake Association, Car Department Officers' Association, International Railway Master Blacksmith's Association, International Railway Fuel Association, International Railway General Foremen's Association, Master Boiler Makers' Association and the Traveling Engineers' Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—W. R. Curtis, F. T. R., M. & O. R. R., Chicago, Ill.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 816 McCormick Bldg., Chicago, Ill. Annual meeting, October 27-29, 1936, New Orleans, La.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York, N. Y.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—F. O. Whiteman, Union Station, St. Louis, Mo. Annual meeting, June 16-18, 1936, Hotel Stevens, Chicago, Ill.

AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.—E. A. Abbott, Poole Bros., Inc., 85 W. Harrison St., Chicago, Ill. Annual meeting, January 15-16, 1937.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, C. I. & L. Ry., 836 S. Federal St., Chicago, Ill. Annual meeting, October 5-8, 1936, Royal York Hotel, Toronto, Ontario.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, 319 N. Waller Ave., Chicago, Ill. Annual meeting, October 20-22, 1936, Hotel Stevens, Chicago, Ill. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY CAR INSTITUTE.—W. C. Tabbert, 19 Rector St., New York, N. Y.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—R. G. Buford, Asst. Mgr., Industrial Development Dept. M-K-T R. R., Dallas, Tex.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the Association of American Railroads, Division IV.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 16-18, 1937, Palmer House, Chicago, Ill.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—M. Fenaja, Missouri Pacific Lines Magazine, Missouri Pacific Lines Bldg., St. Louis, Mo.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M., St. P. & P. R. R., 11402 Calumet Ave., Chicago, Ill. Annual meeting, September 17-18, 1936, Hotel Sherman, Chicago, Ill.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—C. E. Davies, 29 W. 39th St., New York N. Y. Semi-annual meeting, June 15-22, 1936, Hotel Adolphus, Dallas, Texas.

Railroad Division.—Marion B. Richardson, 192 E. Cedar St., Livingston, N. J.

AMERICAN TRANSIT ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York, N. Y. Annual meeting, September 21-24, 1936, The Greenbrier Hotel, White Sulphur Springs, W. Va.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1427 Eye St., N. W., Washington, D. C. Annual meeting, January 26-28, 1937, New Orleans. La.

ASSOCIATION OF AMERICAN RAILROADS.—H. J. Forster, Transportation Bldg., Washington, D. C.

Operations and Maintenance Department.—J. M. Symes, Vice-President, Transportation Bldg., Washington, D. C.

Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Protective Section.—J. C. Caviston, 30 Vesey St., New York, N. Y.
Safety Section.—J. C. Caviston, 30 Vesey St., New York, N. Y. Next meeting, June 23-25, 1936, Hotel Stevens, Chicago, Ill.
Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York, N. Y. Next meeting, October 6-8, 1936, Mayflower Hotel, Washington, D. C.
Division II.—Transportation.—L. R. Knott, 59 E. Van Buren St., Chicago, Ill.
Division IV.—Engineering.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting March 16-18, 1937, Palmer House, Chicago, Ill.
Construction and Maintenance Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting March 16-18, 1937, Palmer House, Chicago, Ill.
Electrical Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill.
Signal Section.—R. H. C. Balliet, 30 Vesey St., New York, N. Y.
Division V.—Mechanical.—V. R. Hawthorne, 59 E. Van Buren St., Chicago, Ill. Annual meeting, June 25-26, 1936, Congress Hotel, Chicago, Ill.
Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y.
Division VII.—Freight Claims.—Lewis Pilcher, 59 E. Van Buren St., Chicago, Ill.
Division VIII.—Motor Transport.—George M. Campbell, Transportation Bldg., Washington, D. C.
Car-Service Division.—C. A. Buch, Transportation Bldg., Washington, D. C.
Traffic Department.—A. F. Cleveland, Vice-President, Transportation Bldg., Washington, D. C.
Finance, Accounting, Taxation and Valuation Department.—E. H. Bunnell, Vice-President, Transportation Bldg., Washington, D. C.
Accounting Division.—E. R. Ford, Transportation Bldg., Washington, D. C. Annual meeting, June 30-July 2, 1936, Book-Cadillac Hotel, Detroit, Mich.
Treasury Division.—E. R. Ford, Transportation Bldg., Washington, D. C.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—F. L. Johnson, Chief Clerk and Claim Agent, General Claims Dept., Alton R. R., 340 W. Harrison St., Chicago, Ill. Annual meeting June 17-19, 1936, Hotel St. Paul, St. Paul, Minn.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS—Jos. A. Andreucetti, C. & N. W. Ry., 1519 Daily News Bldg., 400 W. Madison St., Chicago, Ill. Annual meeting, October 27-29, 1936, Hotel Sherman, Chicago, Ill. Exhibit by Railway Electrical Supply Manufacturers' Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. S. Carlisle, National Lead Company, 900 W. 18th St., Chicago, Ill. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 2271 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, second Monday of each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 S. Morgan St., Chicago, Ill. Annual meeting, September 15-16, 1936, Hotel Sherman, Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, 2514 W. 55th St., Chicago, Ill. Regular meetings, second Monday of each month, except June, July and August, La Salle Hotel, Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 S. Main St., Los Angeles, Cal. Club not active at present.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—E. G. Bishop, Illinois Central System, East St. Louis, Ill. Regular meetings, third Tuesday of each month except June, July and August, Hotel Statler, St. Louis, Mo.

CENTRAL RAILWAY CLUB OF BUFFALO.—Mrs. M. D. Reed, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month except June, July and August, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 2920 Utopia Place, Hyde Park, Cincinnati, Ohio. Operation suspended indefinitely.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings temporarily suspended.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—T. D. Smith, 1660 Old Colony Bldg., Chicago, Ill. Annual meeting, September 17-18, 1936, Hotel Sherman, Chicago, Ill.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn. Annual meeting September 15-16, 1936, Hotel Sherman, Chicago, Ill.

INTERNATIONAL RAILWAY MASTERS BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual meeting, September 17-18, 1936, Hotel Sherman, Chicago, Ill.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y. Annual meeting, September 17-18, 1936, Hotel Sherman, Chicago, Ill.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—Clyde S. Bailey, 810 18th St., N. W., Washington, D. C. Annual meeting, November 10-13, 1936, Atlantic City, N. J.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. H. White (Pres. and Sec'y), Room 1826, 208 S. La Salle St., Chicago, Ill. Exhibit at A. R. E. A. Convention, March 16-18, 1937, Palmer House, Chicago, Ill.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September, Copley-Plaza, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York, N. Y. Regular meetings, third Friday of each month, except June, July and August, 29 W. 39th St., New York, N. Y.

PACIFIC RAILWAY CLUB.—William S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings, second Thursday of each month, alternately at San Francisco and Oakland, excepting June at Los Angeles and October at Sacramento.

RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton (Treas. and Asst. Sec'y), First National Bank Bldg., Chicago, Ill.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Regular meetings, fourth Thursday of each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. McC. Price, Allen-Bradley Company, 600 W. Jackson Blvd., Chicago, Ill. Meets with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—P. A. Bissell, 40 Broad St., Boston, Mass. Annual meeting, October 20-21, 1936, Congress Hotel, Chicago, Ill.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Stores Division, and Motor Transport Division, Association of American Railroads.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with Telegraph and Telephone Section of A. A. R., Division I.

RAILWAY TIE ASSOCIATION.—I. C. Rowe, 2091 Railway Exchange Bldg., St. Louis, Mo.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—Merged with Association of American Railroads.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual meeting, September 15-17, 1936, Hotel Stevens, Chicago, Ill.

SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with A. A. R., Signal Section.

SOCIETY OF OFFICERS, UNITED ASSOCIATIONS OF RAILROAD VETERANS.—M. W. Jones, Baltimore & Ohio, Mt. Royal Station, Baltimore, Md. Annual meeting, October, 1936, Detroit, Mich.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta, Ga.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. R. R., Atlanta, Ga.

TOOL FOREMEN SUPPLIERS' ASSOCIATION.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago, Ill. Meets with American Railway Tool Foremen's Association.

TORONTO RAILWAY CLUB.—R. H. Burgess, P. O. Box 8, Terminal "A," Toronto, Ont. Regular meetings, fourth Monday of each month, except June, July and August, Royal York Hotel, Toronto, Ont.

TRACK SUPPLY ASSOCIATION.—D. J. Higgins, Gardner-Denver Company, 332 S. Michigan Ave., Chicago, Ill. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—Miss E. Earl, acting secretary, 10213 Hampden Avenue, Cleveland, Ohio. Annual meeting September 15-16, 1936, Hotel Sherman, Chicago, Ill.

WESTERN RAILWAY CLUB.—C. L. Emerson, C. M. St. P. & P., Chicago, Ill. Regular meetings, third Monday of each month, except June, July, August and September, Hotel Sherman, Chicago, Ill.

Supply Trade

The general offices of the **Fruit Growers Express Company,** the **Western Fruit Express Company,** the **Burlington Refrigerator Express Company** and the **National Car Company** have been moved from 1259 Munsey building, to 1101 Vermont avenue, Washington, D. C.

The Hutchins Car Roofing Company, Detroit, Mich., and the **Chicago-Cleveland Car Roofing Company,** Chicago, have merged under the corporate name of the **Chicago-Hutchins Corporation,** with general offices at 332 South Michigan avenue, Chicago.

E. R. Packer has resigned his position as mechanical engineer with the Q & C Company, New York, and has been appointed assistant to the president of **The Rails Company,** with headquarters at New Haven, Conn. Mr. Packer has served his apprenticeship in both shop and foundry practice and was consecutively draftsman, chief draftsman, estimator and sales engineer. He has been for a number of years identified with the railway supply business, specializing in locomotive, car, and track devices, which are now extensively used. He has had wide experience in the development of snow-fighting equipment, including snow flangers and plows, and electric heaters for railway switches and third rails. He has devoted much time to forced feed mechanical lubrication for locomotives and has contributed improvements in this field. In his association with The Rails Company, Mr. Packer will continue in the development, promotion, and sales of devices to serve the same general field with which he has been so closely associated.

John C. Stewart, supervisor of insulation sales of the **United States Gypsum Company,** with headquarters at Chicago, has been promoted to manager of railroad sales, with the same headquarters, the department being newly created to co-ordinate the merchandising and servicing of United States Gypsum products to railroads. Except for a short period, Mr.

Moffett Studio

John C. Stewart

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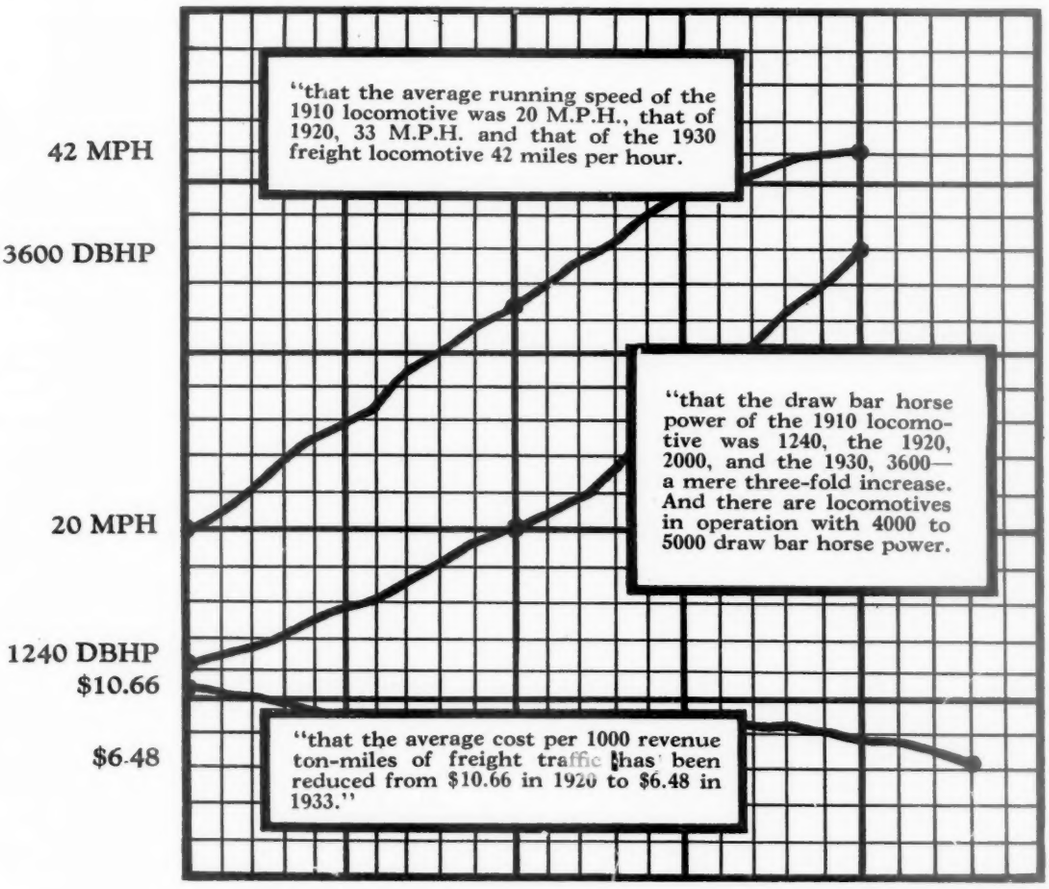
THE RECORD SHOWS* . . .

Speed and Horse Power go UP... Costs go DOWN


"that the average running speed of the 1910 locomotive was 20 M.P.H., that of 1920, 33 M.P.H. and that of the 1930 freight locomotive 42 miles per hour.
"that the draw bar horse power of the 1910 locomotive was 1240, the 1920, 2000, and the 1930, 3600—a mere three-fold increase. And there are locomotives in operation with 4000 to 5000 draw bar horse power.
"that the average cost per 1000 revenue ton-miles of freight traffic has been reduced from $10.66 in 1920 to $6.48 in 1933."
42 MPH
3600 DBHP
20 MPH
1240 DBHP
$10.66
$6.48
1910
1920
1930
1935

Increased draw bar horse power and improved design of modern locomotives moves heavier trains at higher speeds and at greatly reduced costs per 1000 revenue ton-miles.

Modern power is essential for economical railroading.

*L. W. Wallace, Director of Equipment Research; Association of American Railroads, before the Pittsburgh Railway Club.

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

LIMA LOCOMOTIVE WORKS INCORPORATED

Stewart has been with the United States Gypsum Company in various sales capacities since 1916, when he entered its employ as a salesman in the southwest. From 1927 to 1930 he was associated with the **Stewart Inso Board Company,** St. Joseph, Mo., and when this company was taken over by the United States Gypsum Company in 1930 he resumed his duties as a supervisor of insulation sales.

Karl Herrmann, vice-president and general manager of the **Bantam Ball Bearing Company,** South Bend, Ind., has retired, and has been succeeded by **A. H. Frauenthal,** assistant general manager. Mr. Frauenthal entered the employ

A. H. Frauenthal

of the Bantam Company in 1930, previous to which time he had been quality engineer for the Studebaker Corporation and chief inspector and metallurgical engineer for the Chandler Motor Company. Since entering the employ of the Bantam Company he has occupied the position of sales engineer, divisional manager in charge of sales engineering and manufacturing and assistant general manager.

Mr. Herrmann is retiring in accordance with plans made when the Bantam Ball Bearing Company was consolidated with the Torrington Company. He will be retained as a consulting engineer. He entered the employ of the Bantam Company in 1929 as vice-president and general man-

Karl Herrmann

ager, prior to which he had had over 30 years' experience in engineering, approximately 20 years of which was with the Studebaker Corporation. Mr. Herrmann plans to re-enter some phase of the automotive field.

American Locomotive Company

The American Locomotive Company has made the following appointments effective June 1: J. G. Blunt, mechanical engineer has been appointed chief mechanical engineer, with headquarters at Schenectady, N. Y.; A. W. Bruce, designing engineer, has been appointed assistant vice-president, locomotive engineering, with headquarters at New York; E. J. Edwards, engineer of tests, has been appointed chief metallurgical engineer, with headquarters at Schenectady, and A. I. Lipetz, consulting engineer, has been appointed chief consulting engineer, in charge of research, with headquarters at Schenectady.

J. G. Blunt is a graduate of the University of Michigan where he obtained his Bachelor of Science degree in 1894. In 1897, after a few years' experience as a machinist and draftsman with several manufacturing concerns, Mr. Blunt became a draftsman in the employ of the Brooks Locomotive Company at Dunkirk, N. Y. In 1899 he was promoted to foreman and later became chief draftsman. In 1906, when the general drawing room of the American Locomotive Company was formed by moving all the subsidiary plant engineering forces to Schenectady, Mr. Blunt, under the title of engineer of the drafting department, was assigned the duties of organizing these combined forces at Schenectady. Following this he was appointed superintendent of the general drawing room, and in 1916 became mechanical engineer.

A. W. Bruce is a graduate of the Worcester Polytechnic Institute (1901). From 1901 to 1903 he was employed in the drawing room of the Rhode Island Works of the American Locomotive Company and in 1904 was transferred to the calculating department of the Schenectady Works. In 1905 he served in the mechanical engineer's office of the Northern Pacific at St. Paul, Minn., and during 1906 and 1907 was with the American Car & Foundry Company at New York and Berwick, Pa. In 1908 Mr. Bruce returned to the engineering department of the American Locomotive Company at New York and was later given full charge of the specification department. In 1924 he was promoted to designing engineer.

E. J. Edwards entered the employ of the American Locomotive Company as an office boy in 1906. In 1907 he was transferred to the laboratory at Schenectady, and later served successively as local engineer of tests at the Cooke and Rogers plants; in charge of heat-treating activities at various plants; laboratory foreman, and assistant engineer of tests. In April, 1917, he was appointed engineer of tests. Mr. Edwards is an active member of the American Foundrymen's Association, the American Metals Society, the American Welding Society, and the American Society for Testing Materials. Recently he was appointed chairman of a group representing the American Society for Testing Materials to co-operate with the Materials Section of the Boiler Construction Code of the American Society of Mechanical Engineers.

A. I. Lipetz, upon graduation from a technical school in Russia in 1902 with the degree of engineer technologist (mechanical engineer), entered railway service as an apprentice on the Moscow-Kiev-Voronesh Railway, later serving as draftsman, engineer, inspector and assistant master mechanic. From 1906 to 1909 he was assistant professor of thermodynamics and railway mechanical engineering at the Kiev Polytechnic Institute, Kiev, Russia, passing there examinations preliminary to the degree of Adjoint of Applied Mechanics (Doctor of Engineering). For the following three years he held the positions of senior motive power inspector and chief of the locomotive department of the Taskent Railway, and from 1913 to 1917 served in the Russian Railway Administration, Ministry of Transportation, Petrograd, Russia, as chief of the locomotive department. During this period he was sent twice by the Russian Imperial Government to the U.S.A. He served the Russian State Railways in the United States, first as representative of the Railway Administration and later as assistant chief and then chief of the Russian Mission of Ways of Communication. In 1920 Mr. Lipetz joined the American Locomotive Company as European sales and technical representative, in 1925 becoming consulting engineer at Schenectady. He is the author of books and many papers on steam and Diesel locomotives and in 1930 was the reporter for America on locomotives of new types at the International Railway Congress held at Madrid, Spain. Since 1927 he has been also non-resident professor of locomotive engineering at Purdue University, Lafayette, Ind.

OBITUARY

B. S. Spaulding, representative of Fairbanks, Morse & Co., Chicago, died in Rochester, Minn., on June 2.

Joseph Dolar, vice-president of Templeton, Kenly & Co., Chicago, died in that city on May 30 of pneumonia. He entered the employ of this company in 1906 as a draftsman, and later became works manager, purchasing agent, and in 1914 vice-president in charge of purchases.

George R. Murphy, manager of the Pacific Coast district of The Electric Storage Battery Company, Philadelphia, Pa., died on May 14. Mr. Murphy was born in Hoboken, N. J., 61 years ago, and was graduated from Fordham University. Later he studied electrical engineering at Columbia University, from which institution he was also graduated. In 1900 he joined The Electric Storage Battery Company, and served in the operating department at both Philadelphia and New York. He was transferred to the San Francisco branch in 1903, being connected first with the operating and then with the sales departments. In 1916 he was placed in charge of the San Francisco branch and shortly thereafter was made manager of the Pacific district.

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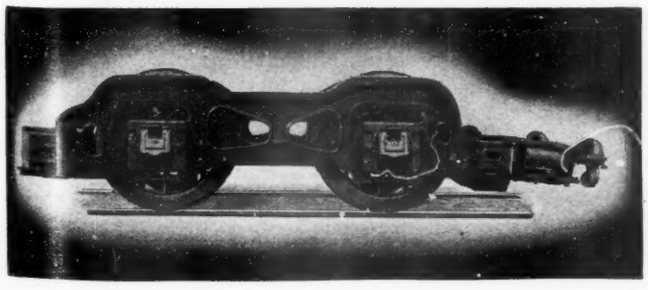
TO MAINTAIN OPERATING STANDARDS WITH AIR CONDITIONED TRAINS . . .

DEMANDS BOOSTER POWER



The necessity of air conditioning through passenger trains adds equivalent weight of one or more cars.

If operating standards are to be maintained this increased load can best be compensated for by the application of The Locomotive Booster.

The Locomotive Booster provides the added power needed for smooth starting and quick acceleration to road speeds. With fast schedules these minutes gained at every stop are a material factor in keeping trains on time.

Whatever the additional demands on the locomotive, The Booster provides the most economical means of maintaining satisfactory train operation and railroad popularity.

No locomotive device is better than the replacement part used for maintenance.
Genuine Franklin repair parts assure accuracy of fit and reliability of performance.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Equipment and Supplies

1936 Rolling Stock Orders Above Last Year's Totals

May brought freight cars above 1935; locomotives and passenger cars crossed line previously

Domestic Orders for 9,677 freight cars and 10 locomotives were reported in May issues of *Railway Age*. With these freight car orders bringing the total to date above that of 1935's 12 months, the 1936 orders for all classes of rolling stock are now ahead of those placed throughout last year.

During the first five months of the current year a total of 22,240 freight cars have been ordered for domestic service, as compared with 18,699 ordered during the entire 12 months of 1935. Furthermore, there were outstanding on June 1 inquiries for 4,575 freight cars, which, when converted into orders, will bring this year's total to date above that for the entire 12 months of any year since 1930.

The 10 locomotives ordered in May brought the 1936 total to date to 98, as compared with 83 locomotives ordered throughout last year. Included in the current year's orders are 86 steam locomotives, as compared with 28 of this type ordered in 1935. At the close of the month there were outstanding inquiries for 21 steam locomotives and in addition there have been ordered this year power units for four streamlined trains.

No passenger train car orders were reported for May and thus the equipment situation in this connection remains the same as reported in the *Railway Age* of April 9. As pointed out at that time, passenger-train cars ordered thus far in 1936 totaled 87 as compared with 63 ordered throughout 1935. In addition there has been a 1936 order for five streamlined trains as compared with three such trains ordered in 1935 and inquiries were outstanding on May 31 for 29 passenger-train cars.

Rail orders for May totaled 7,360 tons, thus bringing the 1936 five-months total to 92 per cent of that for the entire 12 months of 1935. The latter—495,300 tons—compares with 457,485 tons placed thus far this year.

LOCOMOTIVES

THE PORTLAND TERMINAL COMPANY is inquiring for five Diesel-electric locomotives.

THE TOLEDO, PEORIA & WESTERN is inquiring for four locomotives of the 4-8-4 type.

THE CENTRAL OF BRAZIL is inquiring for two or three locomotives of the 4-10-12 type. Paulo de Andrade Martins Costa is chief mechanical engineer, Praca da Republica, Rio de Janeiro, Brazil.

NORFOLK SOUTHERN.—The annual report of this company contains the following: "Consideration is now being given to the purchase of heavier power to improve operations on the main line between Norfolk, Va., and Charlotte, N. C."

THE ST. LOUIS SOUTHWESTERN has applied to the federal district court for permission to spend $1,933,203 and a hearing will be held at St. Louis, Mo., on June 19. The railroad seeks authority to purchase five 4-8-4 type locomotives, fifty 50-ft. automobile cars, and five coaches and to equip 100 box cars with steel sides and automobile doors and apply steel underframes to 50 flat cars. It has also applied for permission to buy 740 tons of 112-lb. rails and the necessary track accessories.

FREIGHT CARS

THE AMERICAN RAILROAD OF PORTO RICO is inquiring for seven freight cars.

THE UNION PACIFIC is inquiring for underframes for 40 ft. 6 in. 50-ton box cars of the A.A.R. standard modified, the inquiry asking for bids on lots of 250, 500 and 1,000.

IRON & STEEL

NEW YORK CENTRAL.—Bids have been asked for on about 4,700 tons of steel to be used on the West Side Improvements of this road between 111th and 121st streets, New York City.

MISCELLANEOUS

PENNSYLVANIA.—Work is proceeding on schedule on this road's 10,000-car freight equipment program of improvement commenced early this year; 1,199 auto cars, 3,226 box cars and 300 covered hopper cars, totaling 4,725, have been turned out and are now in service. The orders for this equipment were reported in the *Railway Age* of December 14, 1935, page 800. The Pennsylvania through the remainder of this project is providing continuing employment for about 8,000 men in its own shops and in the car-building and supply industries. Of the 6,000 cars assigned for construction in the railroad's own shops at Altoona, Pa., Enola and Pitcairn, 1,499 have been completed and 4,501 are in process of building. Out of the 4,000 which were placed on order at seven outside car-building plants, 3,226 have been finished and delivered to the railroad and 774 are under production. The work is expected to continue over the remainder of the present year; the building of these 10,000 cars when completed will have represented an estimated total of 11,000,000 man-hours of work.

Domestic Equipment Orders Reported in Issues of the Railway Age in May, 1936

LOCOMOTIVES

Date	Name of Company	No.	Type	Builder
May 23	New York, New Haven & Hartford	10	4-6-4	Baldwin Locomotive Works

FREIGHT CARS

Date	Name of Company	No.	Type	Builder
May 9	New York, Chicago & St. Louis	500	Box	General American
		225	Gondola	Bethlehem Steel
		50	Flat	Bethlehem Steel
		2	Flat	American Car & Foundry
May 23	Pere Marquette	400	Auto	Ralston Steel Car Co.
		100	Auto-Furn.	Ralston Steel Car Co.
May 23	Chesapeake & Ohio	1,800	Hopper	American Car & Foundry
		1,700	Hopper	Pullman-Standard
		500	Box	Pullman-Standard
		150	Auto-Box	Pullman-Standard
		650	Gondola	Bethlehem Steel Co.
		500	Box	Gen. Amer. Trans. Corp.
		100	Gondola	Ralston Steel Car Co.
May 23	Norfolk & Wesern	500	Hopper	Pressed Steel Car Co.
		500	Hopper	Virginia Bridge Co.
May 23	Missouri Pacific	1,500	Box	Mt. Vernon Car Mfg. Co.
		500	Hopper	American Car Foundry

Construction

CHICAGO GREAT WESTERN.—A contract has been awarded to the Ross & White Company, Chicago, for an automatic, electric, locomotive coaler for installation at the terminal at Minneapolis, Minn.

LEHIGH VALLEY.—A contract has been given to I. M. Ludington Sons, Inc., Rochester, N. Y., for grade crossing elimination work at Rush, N. Y., to cost about $75,000.

NORFOLK & WESTERN.—A contract has been given to Haley, Chisholm & Morris, Charlottesville, Va., at about $45,000 for work on a spur track extending from Hanger, Va., up Levisa Fork; wye track at Hanger connecting spur track with Buchanan branch extension and proposed operation tracks for Oakwood Smokeless Coal Company.

NORTHERN PACIFIC.—A contract has been awarded to the Morrison-Knudson Company, Boise, Idaho, for the construction of an embankment to replace an old wrought iron and steel viaduct 12 miles west of Missoula, Mont., on the passenger line to Spokane, Wash. This work, which will involve the moving of 300,000 cu. yd. of earth and the construction of a 6-ft. by 5-ft. concrete culvert, is estimated to cost approximately $60,000.

SEABOARD AIR LINE.—The Interstate Commerce Commission has authorized the receivers of this company to construct a branch line extending southwesterly 10 miles from Plains, Fla.; estimated outlay, $187,122.

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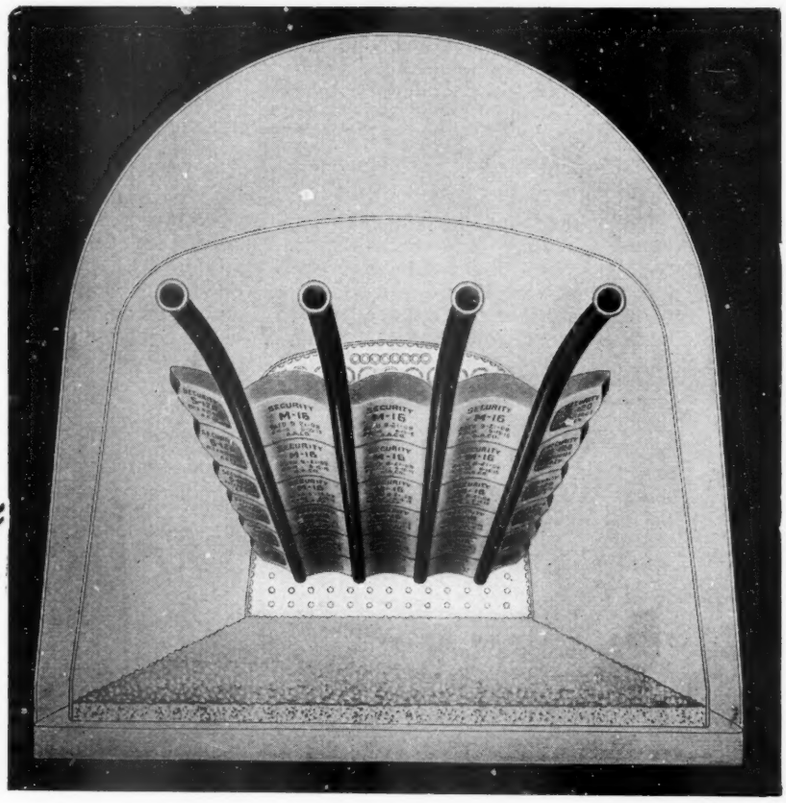


fundamental brick arch requirements

Maximum fuel economy and maximum boiler capacity are assured by the Security Brick Arch because:

1. **The Security Arch is designed to meet the conditions of the particular class of locomotive in which it is to operate.**
2. **The individual brick is designed to meet the irregularities of firebox construction and to compensate for expansion and contraction.**
3. **The refractory materials are carefully selected to provide long life and low maintenance costs.**

These three fundamental factors are the result of many years of experience in the design and production of arches for locomotive service—a breadth of experience that is nowhere else available.

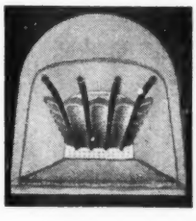
●

There's More To
SECURITY ARCHES
Than Just Brick

●

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists



AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

Financial

CHICAGO & ILLINOIS MIDLAND.—*Acquisition of Springfield, Havana & Peoria.*—The Interstate Commerce Commission has authorized this company to acquire the property and franchises of the Springfield, Havana & Peoria which it already controls by lease and stock ownership.

CHICAGO & NORTH WESTERN.—*Abandonment.*—The Interstate Commerce Commission has authorized the trustee of this company to abandon a branch line between Deloit, Iowa, and Denison, 6.2 miles.

CHICAGO & NORTH WESTERN.—*Abandonment.*—The Interstate Commerce Commission has authorized abandonment of a portion of the line of this company, Cortland, Ill., to Sycamore Junction, 3.8 miles.

CHICAGO & WESTERN INDIANA.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $24,462,000 of first and refunding mortgage series D 4¼ per cent bonds, maturing in 1962, $22,727,000 of which are to be sold and the proceeds used to redeem $22,134,000 of outstanding bonds bearing a higher interest rate—the remainder to be used at collateral, delivered directly in payment of indebtedness to proprietary tenant companies or held in its treasury. The issue is provided with a sinking fund and the lessees or their trustees (C. & E. I., Chicago & Erie, C. I. & L., G. T. W. and Wabash) have been authorized to assume liability as such. That part of the issue designated for sale is to be sold to a nine-member syndicate headed by Morgan Stanley & Co., Inc., at par. The net savings of the transaction to the company, after payment of premiums and expenses, are estimated at $3,686,537.

CHICAGO, BURLINGTON & QUINCY.—*Equipment Money at Less Than 2 Per Cent.*—In competitive bids submitted to this company on a proposed issue of $3,950,000 of 2½ per cent equipment trust certificates, a high bid of 102.72933 was made by the Harris Trust & Savings Bank of Chicago, which would make the average cost of the money to the railroad approximately 1.95 per cent.

CHICAGO, ROCK ISLAND & PACIFIC.—*Trustees' Certificates.*—The Interstate Commerce Commission has authorized the trustees of this company to issue $4,500,000 of their 3½ per cent certificates, to cover part of a program of expenditure of $14,381,096 on deferred maintenance of way and structures and capital improvements which the trustees propose to carry out during the current year.

DENVER & RIO GRANDE WESTERN.—*Institutional Holders Enlarge Protective Group.*—Following several months of negotiation between representatives of institutional holders of this company's obligations and its management without reaching an agreement on its reorganization, it has been announced that the fiduciary institutions' representation has been reorganized and enlarged under the chairmanship of George S. Van Schaick, vice president of the New York Life Insurance Company. J. F. B. Mitchell, of Wood, Low & Co., who heretofore has headed the negotiations for the institutions, remains a consultant to the committee. Henry W. Anderson remains as counsel, and Oscar Ewing, of Hughes, Schurman & Dwight, has been added as counsel.

GREAT NORTHERN.—*Bonds.*—The Reconstruction Finance Corporation has called for bids by June 18 on an issue of $4,935,000 of 4 per cent serial bonds dated April 1, 1935, and maturing serially from October 1, 1936, to April 1, 1944.

GREAT NORTHERN.—*Stockholders Buy Bonds.*—Of the recent issue of $99,422,400 of general mortgage 4 per cent bonds which were offered first to the stockholders, these latter subscribed for approximately $94,000,000 of the issue. Bondholders whose rights of subscription were secondary to those of stockholders have over-subscribed the remainder, so the Reconstruction Finance Corporation, which underwrote the issue, will not be called upon to advance any funds.

NEW YORK, NEW HAVEN & HARTFORD.—*Old Colony Lease.*—Trustees of this company filed with the federal court in Connecticut on June 2 a notice that its lease of the Old Colony (with lines from Boston southward and extending throughout Cape Cod) is unprofitable and that they desire that it be broken.

NEW YORK, WESTCHESTER & BOSTON.—*Liquidation Asked.*—Trustees of the New York, New Haven & Hartford have told the federal court that they are unwilling that trustees of this company should continue to use the property, contending that reorganization was impracticable and that steps should be taken to liquidate the property. C. L. Bardo, trustee of the N. Y., W. & B., outlined plans under discussion for increasing commutation fares and reducing wages. The court decided to appoint a neutral expert to report to it on the relationships between the two companies.

PITTSBURGH & WEST VIRGINIA.—*R. F. C. Loan.*—The Interstate Commerce Commission has authorized extension until December 31, 1937, of loans totaling $4,475,207 to this company which were to have matured May 28, a portion of the collateral securing these loans to be released when the company shall have paid $750,000 on account.

SOUTHERN PACIFIC.—*R.F.C. Loan.*—The Interstate Commerce Commission has authorized the extension to November 1 of loans by the Reconstruction Finance Corporation to this company which matured June 1 and which totaled $5,200,000.

ST. LOUIS SOUTHWESTERN. — *$1700 Claimed for Each $1000 Bond.*—The Guaranty Trust Company, as corporate trustee under the first terminal and unifying mortgage bonds of this company, has announced its intention of filing on behalf of these bondholders in the reorganization proceedings a claim for payment in Dutch guilders. There is a total of $8,063,000 face value of these bonds in the hands of the public. The bonds are payable at the holders' option in the currencies of several countries, which option, if the courts should sustain it, would make the claim of the bondholders approximately $1700 for each $1000 of the bonds outstanding, due to the devaluation of the dollar.

VIRGINIAN.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to merge the properties of the Virginian & Western and the Virginian Terminal, which it now controls into the Virginian for ownership, management, and operation.

Average Prices of Stocks and of Bonds

	June 2	Last week	Last year
Average price of 20 representative railway stocks..	47.24	47.15	32.39
Average price of 20 representative railway bonds..	79.43	79.24	73.56

Dividends Declared

Atlanta, Birmingham & Coast.—Preferred, $2.50, payable July 1 to holders of record June 12.

Cincinnati, New Orleans & Texas Pacific.—Extra, $2.50; $5.00, semi-annually, both payable June 24 to holders of record June 10.

Morris & Essex.—$1.75, payable July 1 to holders of record June 5.

New York, Lackawanna & Western.—5 Per Cent Guaranteed, $1.25, quarterly, payable July 1 to holders of record June 12.

Reading Company.—Second Preferred, 50c, quarterly, payable July 9 to holders of record June 18.

Wheeling & Lake Erie.—7 Per Cent Prior Lien, $35, payable June 4 to holders of record May 29. (Accumulated dividends.)

Railway Officers

EXECUTIVE

J. A. Small, general manager of the Southern Pacific of Mexico, with headquarters at Guadalajara, Jal., has been appointed vice-president.

E. G. Swanson, chief clerk to the vice-president, traffic department, of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed assistant to the vice-president, traffic department, effective June 1.

D. J. Kerr, assistant to the operating vice-president of the Great Northern, with headquarters at St. Paul, Minn., has been appointed assistant to the president of the Lehigh Valley, with headquarters at New York.

R. A. Cox, superintendent of transportation and traffic of the Railway Express Agency, Inc., at San Francisco, Cal., has been appointed assistant to vice-president with the same headquarters, to succeed **L. P. Bergman,** whose appointment as general manager at Kansas City, Mo., is noted elsewhere in these columns.

Kenneth D. Steere, who resigned recently as chairman of the board of the Chicago & Eastern Illinois when he was elected chairman of the executive committee of the Kansas City Southern, was re-elected to the board chairmanship of the C. & E. I. at the annual meeting of

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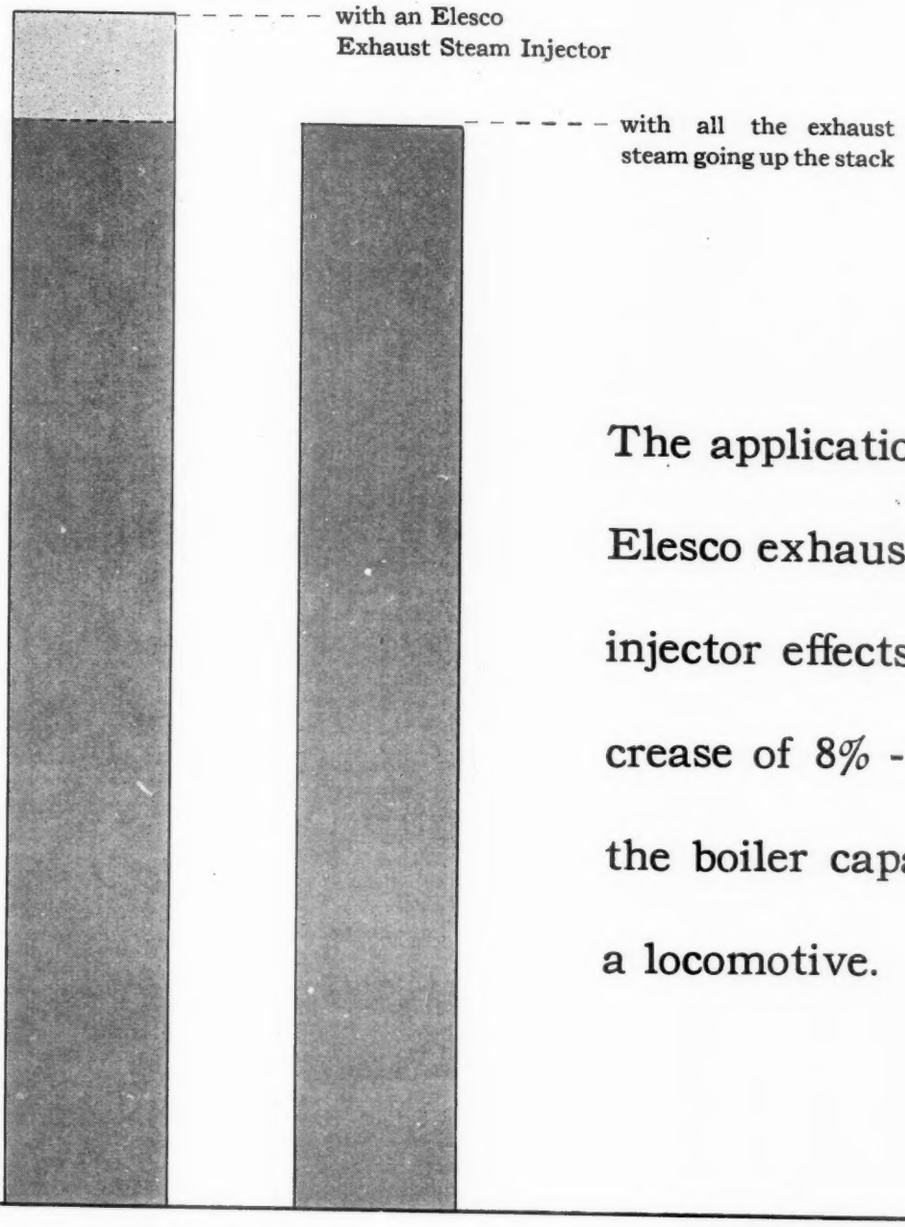
BOILER CAPACITY



The application of an Elesco exhaust steam injector effects an increase of 8% - 12% in the boiler capacity of a locomotive.

ELESCO

Superheaters
Feed Water Heaters
Exhaust Steam Injectors
Superheated Steam Pyrometers
American Throttles

A-1072

THE SUPERHEATER COMPANY

Representative of American Throttle Company, Inc.
60 East 42nd Street, New York
Peoples Gas Building, Chicago
Canada: The Superheater Company, Limited, Montreal

the stockholders on June 3. Mr. Steere's election is subject to the approval of the Interstate Commerce Commission.

Edgar C. Schmidt, director of news service of the Union Pacific, has been appointed assistant to the president, in charge of public relations, with headquarters as before at Omaha, Neb. Mr. Schmidt is a newspaper man of wide experience. He is 52 years of age and a native of Dayton, Ohio, where he entered newspaper work as high school correspondent for the Dayton Daily News in 1900. After graduating from Western Reserve university at Cleveland, Ohio, he served with various trade publications in Chicago, as managing editor. In 1909 he joined the staff of the Salt Lake Tribune (Salt Lake City, Utah), which he later served as city editor and news editor until 1913, when he left active newspaper work to engage in public relations and publicity work at Salt Lake

Edgar C. Schmidt

City. During the World War he was deputy commissioner of commercial economy for the state of Utah under the National Council of Defense, and a member of the Utah State Council of Defense. At the close of the war he became affiliated with the Mutual Creamery Company, Salt Lake City, in charge of its public relations work. Later he organized the Utah Coal Operators' Association, and the Utah Milk Producers' Association, for both of which he conducted public relations work. Thereafter, he served successively as staff writer for the Los Angeles Times, managing editor of the California Oil World and general manager of the Pasadena Morning Sun. In 1927 he went with the Union Pacific as manager of the news bureau at Los Angeles, Cal. Two years later he was appointed director of news Service of the system, with headquarters at Omaha, which position he was holding at the time of his recent promotion to assistant to the president, in charge of public relations.

FINANCIAL, LEGAL AND ACCOUNTING

G. A. Anderson, general auditor of the Minneapolis & St. Louis, effective June 1, was appointed comptroller, with headquarters as before at Minneapolis, Minn. At the same time **W. C. Knoble,** assistant general auditor, was appointed assistant comptroller.

Warren S. Painter, chief accountant for the Pennsylvania, has been appointed auditor of passenger traffic, with headquarters at Philadelphia, Pa., succeeding **Charles E. Ward,** who has been granted a leave of absence after 52 years of service with this road. **Louis R. Beck,** chief accountant in the office of the auditor of passenger traffic, has been appointed assistant auditor of passenger traffic, succeeding **Horace M. Langworthy,** who has retired after 50 years of service with the Pennsylvania. **John Pemberton, Jr.,** assistant to the treasurer, has been appointed treasurer.

OPERATING

M. I. Dunn, division engineer of the Huntington division of the Chesapeake & Ohio, with headquarters at Huntington, W. Va., has been appointed trainmaster on the Handley-Coal subdivisions, with headquarters at Handley, W. Va.

A. D. Handley, superintendent for the Southern Pacific of Mexico, with headquarters at Mazatlan, Sin., has been appointed general manager, succeeding **J. A. Small,** who has been appointed vice-president. **S. M. Houston,** superintendent of motive power at Empalme, Son., has been appointed assistant general manager. **Alfonso Kasten** has been appointed acting superintendent of motive power, succeeding Mr. Houston. **Julian V. Arana** has been appointed acting superintendent of the Sinaloa division, succeeding Mr. Handley. **A. M. Fernandez,** assistant superintendent at Empalme, has been appointed acting superintendent of the Sonora division.

L. P. Bergman, assistant to vice-president, Western departments, Railway Express Agency, Inc., with headquarters at San Francisco, Cal., has been appointed general manager of the Mid-West department at Kansas City, Mo., succeeding **A. L. Bird,** who has retired after nearly 50 years of continuous service. **H. H. Smith,** operating superintendent of the Washington-Alaska-Yukon division, with headquarters at Seattle, Wash., has been appointed superintendent of transportation and traffic, with headquarters at San Francisco, to succeed **R. A. Cox,** whose appointment as assistant to vice-president to succeed Mr. Bergman is noted elsewhere in these columns. **V. R. Burton,** chief clerk to vice-president, has been promoted to superintendent of the Northern California and Nevada-Oregon division, with headquarters at Sacramento, Cal., to succeed **E. M. Graham,** who has been transferred to Seattle, to replace Mr. Smith. These appointments became effective on June 1.

W. G. Bowen, assistant superintendent of the First District of the Dubuque-Illinois division of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Savanna, Ill., has been promoted to superintendent of the Kansas City division at Ottumwa, Iowa, to replace **W. C. Givens,** who has been transferred to the Iowa division, with headquarters at Marion, Iowa. Mr. Givens succeeds **A. J. Elder,** who has been transferred to the Dubuque-Illinois division at Savanna, to replace H. **F. Gibson,** resigned. **O. A. Beerman,** trainmaster on the Hastings and Dakota divisions, with headquarters at Aberdeen, S. D., has been appointed assistant superintendent of the Milwaukee Terminal division at Milwaukee, Wis., to succeed **G. H. Rowley,** who has been transferred to the Dubuque-Illinois division at Savanna to succeed Mr. Bowen. **S. F. Philpott** has been appointed trainmaster on the Hastings and Dakota divisions at Aberdeen, to succeed Mr. Beerman.

Henry J. Mullaghy, superintendent of the Scranton division of the Delaware, Lackawanna & Western, has requested that he be relieved of the duties of this position and has been appointed assistant to general superintendent, with headquarters as before at Scranton, Pa. **Robert M. White,** superintendent of the Morris and Essex division, has requested that he be relieved of the duties of this position, and has been appointed assistant to general superintendent, with headquarters as before at Hoboken, N. J. **George W. Murphy,** assistant superintendent of the Morris and Essex division, at Hoboken, has been promoted to superintendent of the Scranton division. The position of assistant superintendent has been abolished. **J. H. Lerbs,** trainmaster of the Scranton division, has been promoted to superintendent of the Morris and Essex division. **Lewis E. Davies,** assistant trainmaster, has been promoted to trainmaster of the Scranton division. The position of assistant trainmaster has been abolished. **J. F. Scanlon,** of the staff of the general superintendent, has been promoted to trainmaster of the Scranton division. **M. M. McClelland,** agent at New York Transfer, Secaucus, N. J., has been promoted to trainmaster of the Bangor and Portland branch of the Morris and Essex division, with headquarters at Bangor, Pa.

G. L. Griggs, whose appointment as general superintendent of the Eastern district of the Chicago, Burlington & Quincy, with headquarters at Galesburg, Ill., was

G. L. Griggs

noted in the *Railway Age* of May 2, has been connected with the Burlington continuously for about 32 years. He is a native of Pawnee county, Neb., and prior

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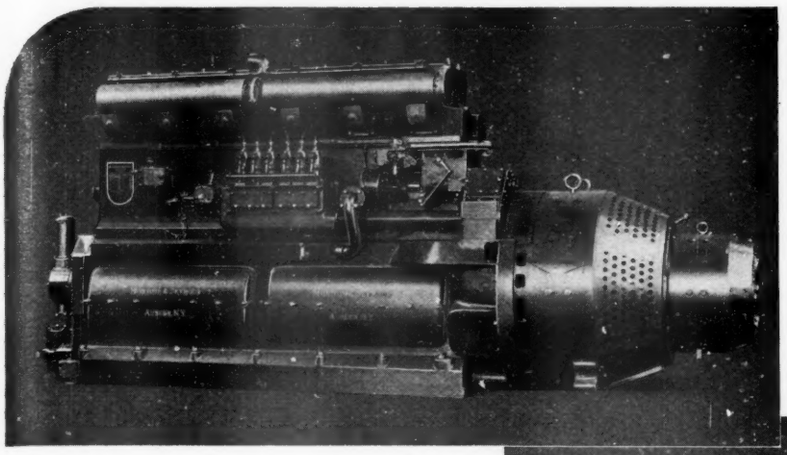

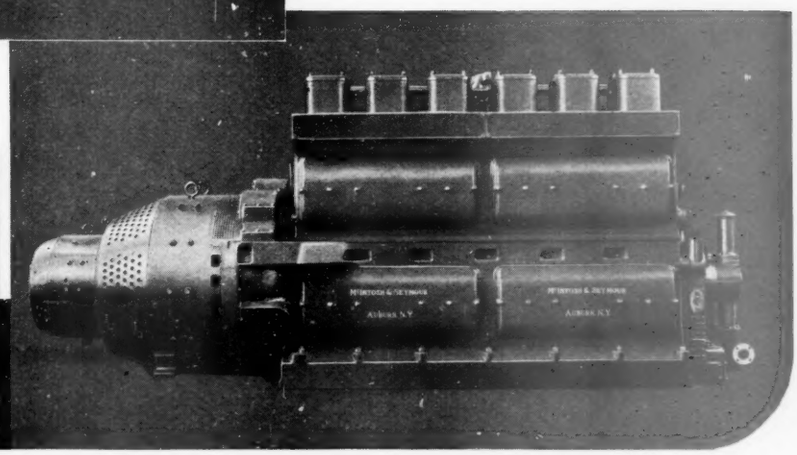

Proved

ALCO TYPE RAILWAY DIESEL ENGINE

THE name "ALCO", when used as a type classification, means much more than designed and/or built by the American Locomotive Company . . . . It means that the unit so characterized, through a reasonable time and over breadth of territory, has been *proved* in the particular service for which it is recommended.

The **ALCO TYPE RAILWAY DIESEL ENGINE** was so designed in June, 1930 . . . . Installations on 14 different railroads have conclusively verified the general utility of this engine for switching service—the particular service for which this engine was originally designed, built, and is still recommended. Write for booklet on ALCO Diesels . . . .

ALCO

AMERICAN LOCOMOTIVE COMPANY

30 CHURCH ST., NEW YORK, N.Y.

to entering railway service engaged in various occupations from 1890 to 1904. In the latter year he entered the service of the Burlington as a stenographer in the office of the general superintendent at Lincoln, Neb. In the following year he was appointed chief clerk to the general superintendent at Alliance, Neb., and in March, 1910, he was further advanced to general yardmaster at the same point. In September, 1910, Mr. Griggs was appointed trainmaster, serving in this position at Sterling, Wyo., and Omaha, Neb., until September, 1912, when he was advanced to superintendent. He held this position at various points, being located on the Galesburg and Beardstown divisions, with headquarters at Galesburg, Ill., at the time of his recent promotion to general superintendent, effective May 1.

J. A. Clancey, superintendent of the Detroit division of the Grand Trunk Western, with headquarters at Detroit, Mich., has been promoted to general superintendent of transportation, with the same headquarters, to succeed **W. R. Davidson,** whose death on May 2 was noted in the *Railway Age* of May 9. The position of superintendent of the Detroit division has been abolished and the jurisdiction of **W. J. Hogan,** superintendent of the Chicago division, has been extended over the Detroit division. Mr. Hogan's headquarters will remain at Battle Creek, Mich. **W. F. Heflin,** chief dispatcher of the Chicago division, has been promoted to the newly-created position of trainmaster of the South Bend subdivision, with headquarters at Battle Creek, Mich. **J. M. Munnings,** trainmaster of the Grand Rapids, Muskegon, Saginaw and Holly (west of Pontiac, Mich.) subdivisions, has been transferred to the Mount Clemens, Jackson, Cass City and Holly (Pontiac and east) subdivisions, with headquarters at Pontiac, to succeed **G. A. Briggs,** who has been transferred to Durand, Mich., to replace Mr. Munnings. **B. L. Tyler** has been appointed trainmaster of the Flint subdivision, with headquarters at Durand. **C. E. Sherman** has been appointed operating inspector, with headquarters at Detroit.

J. A. Clancey

Mr. Clancey was born on June 8, 1884, at Walkerton, Ont., and entered railway service with the Canadian National in 1901, serving in various clerical positions at Toronto, Ont., until September, 1902, when he was sent to Durand, Mich., on the Grand Trunk Western (part of the Canadian National), as a stenographer in the bridge and building department. In the following year Mr. Clancey was transferred to the transportation department, in which he occupied various positions until July, 1910, when he was appointed cashier and supervisor of the Michigan Car Demurrage bureau. In January, 1911, he returned to the transportation department of the Grand Trunk Western, serving successively as car distributor, traveling car service agent, assistant superintendent terminals at Detroit, chief clerk to the general superintendent at Chicago, division agent, Western lines, at Chicago, trainmaster at various points, and superintendent of transportation. On October 1, 1928, he was further promoted to general superintendent of transportation, with headquarters at Detroit, and on October 1, 1932, he was appointed superintendent of the Detroit division.

TRAFFIC

George Gilman, chief clerk to the passenger traffic manager of the Atchison, Topeka & Santa Fe at Chicago, has been promoted to assistant passenger traffic manager, to succeed **Benton M. Bukey,** whose death on March 5 was noted in the *Railway Age* of March 14. **J. R. Moriarity,** division passenger agent at Chicago, has been promoted to the newly-created position of assistant general passenger agent, with the same headquarters. These changes took place on June 1.

J. M. Spann, division freight agent on the Chicago, Rock Island & Pacific at Amarillo, Tex., has been promoted to assistant freight traffic manager, with headquarters at Little Rock, Ark., to succeed **Geo. E. Schnitzer,** who has resigned. **J. W. Hill,** general agent at Detroit, Mich., has been promoted to the newly-created position of general freight agent, with headquarters at Chicago. **G. W. Stewart,** traveling freight agent at Detroit, has been appointed general agent with the same headquarters, to succeed Mr. Hill. These changes became effective on June 1.

O. E. Blacketer, division freight and passenger agent on the Missouri Pacific at Atchison, Kan., has been promoted to succeed **H. S. Snedeker,** general agent at Salina, Kan., who has been transferred to Minneapolis, Minn., to replace **W. H. Arnold,** who has been sent to Chicago as general agent, freight department. **G. B. Riggan,** commercial agent at Birmingham, Ala., has been promoted to general agent, freight and passenger departments, at Chattanooga, Tenn., and has been succeeded by **R. T. Oliver,** traffic representative at Atlanta, Ga.

L. C. Mahoney, assistant freight traffic manager of the Chicago, Burlington & Quincy, has been promoted to freight traffic manager, with headquarters as before at Chicago, to succeed **W. G. Wagner,** who has retired under the pension rules of the company. **R. B. Battey,** assistant freight traffic manager at Chicago, has been appointed to succeed Mr. Mahoney and has been replaced as assistant freight traffic manager by **G. A. Hoffelder,** general freight agent in charge of interstate commerce matters. **Henry Christianson,** commerce assistant, has been appointed assistant general freight agent in charge of interstate commerce matters, in which capacity he takes over the duties formerly discharged by Mr. Hoffelder. **C. J. Nelson,** general agent in the coal department at Chicago, has been appointed coal traffic manager, with headquarters at Chicago. The appointment of Mr. Nelson represents the recreation of a title that was abolished when Mr. Battey, the former incumbent, was appointed assistant freight traffic manager on April 1. **H. B. Meinhardt,** special agent, refrigerator service, with headquarters at Chicago, has had his title changed to general agent, perishable traffic. All these changes became effective on June 1.

William J. Leahy, assistant passenger traffic manager of the Chicago, Rock Island & Pacific, has been promoted to passenger traffic manager, with headquarters as before at Chicago, to succeed **Leon M. Allen,** deceased. A native of Elmira, N. Y., Mr. Leahy was born on July 25, 1867. He has been in railway service for 53 years, having started in 1883 as a clerk in the auditor's office of the Buffalo, New York & Philadelphia (now part of the Pennsylvania) at Buffalo, N. Y. In the following year he went with the West Shore (now part of the New York Central), where he served in various positions in the passenger department until 1887, when he entered the service of the Rock Island as traveling passenger agent. Four years later he was made passenger agent at Philadelphia, Pa., and in 1899 he was appointed general eastern passenger agent at New York. In 1901, Mr. Leahy was advanced to assistant general passenger agent of the Rock Island and the St. Louis, Kansas City & Colorado (controlled by the Rock Island), with headquarters at St. Louis, Mo., being advanced to first assistant general passenger agent on these lines in 1905, with headquarters at Chicago. In 1909 he was further advanced to general passenger agent of the Rock Island, which position he held until 1920, when he was made assistant passenger traffic manager. His

William J. Leahy

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The proof of the pudding is in the eating, so we reprint here a report covering actual performance of

GRIP NUT COMPANY'S BRAKE BEAM SAFETY SUPPORTS

which have made mileage equivalent to over 10 years' service on the average freight car.

[redacted]

[redacted] RAILWAY COMPANY

[redacted]
GENERAL SUPERVISOR AIR BRAKES

[redacted] February 19, 1936.

[redacted]
General Air Brake Inspector.
[redacted]
[redacted]

Dear Sir:

In response to yours of Feb. 4th, file [redacted] regarding the brake beam support manufactured by the Grip Nut Company.

I wish to advise we placed two of these on auxiliary tanks used behind locomotive to increase the water capacity and they have proven very satisfactory as follows:

"The records show that two car sets were applied to water auxiliary cars on Nov. 6, 1933. These cars are in very fast service, making 6,500 miles per month and up until the middle of this month, the cars have approximately 175,000 miles without any repair parts whatever.

"Also on this test, due to the brake shoe not riding the wheel 100,000 miles were obtained before applying new brake shoes. They all wore evenly and were replaced after wearing to 1/4" thickness or down to the steel back."

Referring to your question as to the wear on the rods, you understand that these rods are made of alloyed steel and during this test there was no wear visible and I doubt if there will ever be any depreciable wear on any of the parts.

Trust this is the information you desire.

Sincerely,
[redacted]
Gen'l Supv. Air Brakes.

Note there has been no maintenance expense; further, brake shoe life has doubled. The combined savings effected were greater than the whole cost of the Brake Beam Safety Support and labor of applying it. Specify Grip Nut Company's Brake Beam Safety Support and release on your new cars and on additions and betterment programs.

GRIP NUT COMPANY CHICAGO, ILLINOIS

appointment as passenger traffic manager became effective on June 1.

ENGINEERING AND SIGNALING

William B. Barker, division engineer for the Southern Pacific of Mexico, with headquarters at Mazatlan, Sin., has been appointed acting chief engineer, succeeding **C. E. Cate,** transferred. **Rafael Ballesteros** has been appointed acting division engineer, Sonora division, succeeding **C. V. Chalk. Eduardo Fernandez** has been appointed acting division engineer, Sinaloa division, succeeding Mr. Barker.

MECHANICAL

D. J. Sheehan, mechanical assistant to the president of the Chicago & Eastern Illinois, has been appointed superintendent of motive power, with headquarters as before at Danville, Ill., to succeed **L. S. Kinnaird,** who has retired. These changes were effective on June 1.

P. J. Colligan, general superintendent of motive power of the Chicago, Rock Island & Pacific, with headquarters at Chicago, at his own request, effective June 1, has been relieved of the responsibilities of this position but will continue to serve the railroad in a consulting capacity.

MOTOR TRANSPORT

Williams Tanzer, assistant general passenger agent of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed passenger traffic manager of the Burlington Transportation Company, highway subsidiary of the Burlington Railroad.

OBITUARY

Robert Henry Fish, who retired in 1929 as general superintendent of the Southern Ontario district of the Canadian National, with headquarters at Toronto, Ont., died at his home in that city on May 30. He was 65 years old.

Austin E. Wallace, vice-president and general manager of the Minneapolis, St. Paul & Sault Ste. Marie, and vice-president of the Duluth, South Shore & Atlantic, with headquarters at Minneapolis, Minn., died of a heart attack at his home in that city on June 3. He was 57 years old.

J. G. Teders, assistant engineer on the Staten Island Rapid Transit Lines of the Baltimore & Ohio, with headquarters at Stapleton, N. Y., died at St. Vincent hospital, West Brighton, on June 2, following a short illness. Mr. Teders, who was 61 years of age, had been with the Baltimore & Ohio for 37 years, during the last eight of which he had been in charge of the road's extensive grade crossing elimination work on Staten Island.

The death of **A. T. Blackall,** M. Inst. C. E., who was signal engineer of the Great Western of England from 1897 to his retirement in 1923, was reported in a recent issue of the Railway Gazette (London). From 1903, he had charge also of the telegraph department. Mr. Blackall was the first president of the Institution of Railway Signal Engineers and has throughout his career been a leader in his profession. The Great Western has been a pioneer in cab signaling, its work differing radically from the earlier experiments on the Northern of France. The Great Western's system, now including automatic brake-setting, is the most extensive in Europe. During Mr. Blackall's years in office, signaling practice on the Great Western was modernized throughout, including numerous detail inventions due personally to him, and extensive electric and electro-pneumatic signaling.

Henry W. Beyers, vice-president in charge of traffic of the Chicago & North Western, with headquarters at Chicago, died on May 31 at Mayo Brothers' clinic in Rochester, Minn., after a brief illness. Mr. Beyers had been connected with the North Western continuously for 53 years. He was born at Toledo, Ohio, on March 26, 1870, and entered the service of the North Western in 1883, as a clerk in the office of the commercial agent at Chicago. In 1892 he was advanced to general agent at Cleveland, Ohio, and for the following 23 years he served successively in that

Henry W. Beyers

position, as general agent at Philadelphia, Pa., as general agent at Chicago and as assistant general freight agent at the latter point. On November 10, 1915, Mr. Beyers was promoted to assistant freight traffic manager, with headquarters at Chicago, then being further promoted to assistant traffic manager on August 1, 1918. On March 1, 1920, Mr. Beyers was further advanced to freight traffic manager, being elected vice-president in charge of traffic on June 1, 1929.

Earl Stimson, chief engineer maintenance of the Baltimore & Ohio, with headquarters at Baltimore, Md., died on May 27 of heart disease at a hospital in Massillon, Ohio, where he was taken after being stricken while on an inspection trip. Mr. Stimson had been in the service of the B. & O. for 41 years. He was born on September 2, 1873, at Cincinnati, Ohio, and received his higher education at Cornell university. He entered the service of the Baltimore & Ohio Southwestern (now the B. & O.) in June, 1895, as a rodman in the maintenance of way department at Cincinnati, Ohio. In the following year he was advanced to assistant engineer at the same point, and in 1898, he was transferred to Chillicothe, Ohio. From 1899 to 1901, Mr. Stimson occupied the position of resident engineer on construction at Osgood, Ind., then being promoted to assistant division engineer at Chillicothe. In

Earl Stimson

the following year he was further promoted to division engineer at Flora, Ill., later being transferred to Washington, Ind., and in 1905 he was made engineer maintenance of way, with headquarters at Cincinnati. His next promotion came in April, 1910, when he was made chief engineer maintenance of way, with headquarters at Baltimore. After two years in this capacity he was made engineer maintenance of way of the Eastern lines, with the same headquarters. From August, 1918, to March 1, 1920, during federal control of the railroads, Mr. Stimson held the position of general superintendent maintenance of way and structures of all lines under the jurisdiction of C. W. Galloway, federal manager. At the end of federal control he was appointed chief engineer maintenance of the B. & O., which position he held until his death.

Mr. Stimson had been active in the affairs of the American Railway Engineering Association, having served as its president in 1919-20, and as chairman of its Committee on Rail since 1927. It was under Mr. Stimson's leadership that the Committee on Rail initiated the arrangement with Dr. Elmer A. Sperry which led to the perfection of the transverse fissure detector car. It was also under his chairmanship that this committee developed the standard designs for 112-lb. and 131-lb. rail and fastenings and revised the specifications for rail. Mr. Stimson was also instrumental in negotiations leading to arrangements with the rail manufacturers and the University of Illinois for an exhaustive study of transverse fissures by Prof. H. F. Moore. As head of the maintenance of way department of the B. & O., Mr. Stimson pioneered in numerous developments, noteworthy among which was the system for setting up standards of measurement of maintenance of way work, which system was in vogue on the B. & O. for several years prior to the period of federal control.